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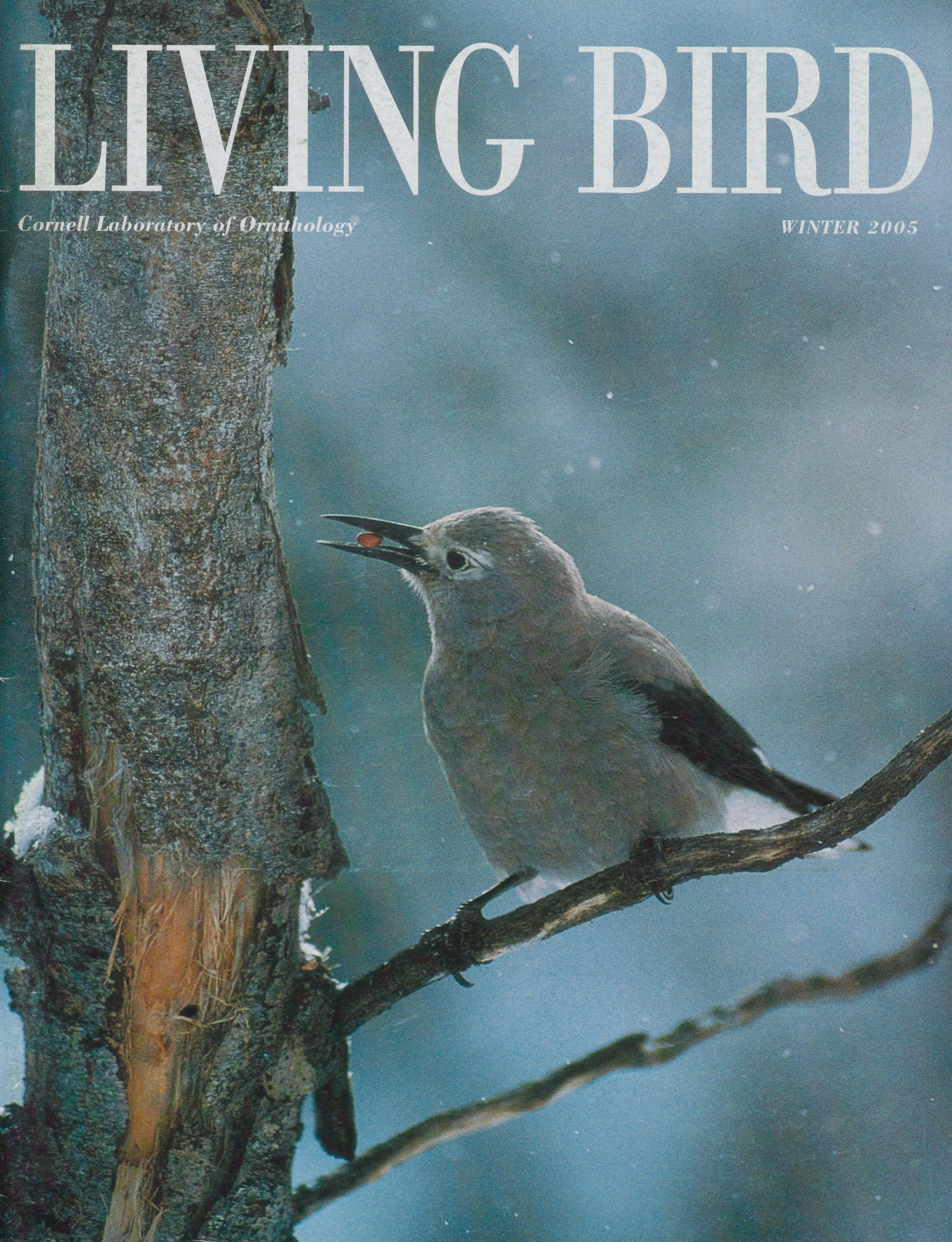
Cornell Laboratory of Ornithology

WINTER 2005



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To interpret and conserve the earth's
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and citizen science focused on birds.

LIVING BIRD

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GREETINGS FROM SAPSUCKER WOODS

Tui De Roy is an editor's dream. A gifted nature photographer, she travels the world with her partner, Mark Jones, looking for interesting wildlife to study and document with a camera. And she's an excellent writer. Her vivid descriptions of exotic locations capture what it's like to be there—dangling from a sheer cliff in the Peruvian Andes to photograph condors; climbing a lofty tree in a Central American rainforest to visit the nest of a rare Harpy Eagle; or diving in the Galápagos Islands to get an underwater view of feeding pelicans.

Every article she writes is an adventure, every one a thrill to read. Tui is back in this issue, this time covering the hornbills of Sulawesi, a large island in Indonesia ("Treetop Encounters," page 12). These birds are spectacular, as you'll see in her pictures, and when a flock of them descends on a fruiting fig tree—holding upwards of 100,000 ripe, juicy figs—the birds strip it clean in just two or three days.

This presented a considerable challenge for Tui and Mark. How could they find a tree with just-ripening figs, climb more than 100 feet into its upper branches, and set up a photographic blind before the birds ate all the fruit and moved on? How they achieved these goals is a study in ingenuity and determination. I hope you enjoy reading the article. I know I'm looking forward to receiving her next manuscript.

Tim Gallagher
Editor-in-Chief

Cover: A Clark's Nutcracker feeds on pine nuts during winter snowfall in the mountains of Idaho. Photograph by Michael Quinton/ Minden Pictures.

Right: Tui De Roy and partner Mark Jones climbed high into the forest canopy to take close-up pictures of Indonesian hornbills. Here a spectacular Knobbed Hornbill feeds in a fruiting fig tree. See article on page 12. Photograph by Tui De Roy.

Back cover: A Great Horned Owl perches in a snow-covered tree in British Columbia. Photograph by Tim Fitzharris/Minden Pictures.

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WINTER 2005 VOLUME 24 NUMBER 1

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Letters

OCEAN WARMING

"This spectacular tropical storm season, predicted months ago, is spawned by unusually warm surface waters. Whether this warming is anomalous, or ominous, remains unclear. Some experts believe it reflects a larger-scale climatic transition toward warmer seas." This quotation from John W. Fitzpatrick's essay in *BirdScope* (Autumn 2004) left me aghast. Since when has Cornell University rejected the Enlightenment and science? Global warming is a scientific fact! There is no longer any scientific debate about whether global warming exists. Dr. Fitzpatrick's waffling is disgraceful. This is not a political issue, a disagreement between Democrats and Republicans or between environmentalists and neoconservatives. At its core, it is a philosophical issue. Does Dr. Fitzpatrick support the Enlightenment, the scientific method, and reason, or does he instead embrace anti-intellectualism and the rejection of science? The Cornell Lab of Ornithology must be responsible and defend the spirit of the Enlightenment. If it means upsetting politicians who reject science and manipulate science for political ends, then so be it. Global warming is a fact, just like evolution. We must take politicians to task when their words and actions run counter to scientific fact. If we do not, scientific facts like global warming will never be politically confronted, and all of nature will suffer the consequences.

Bill Janus
Dillon, Montana

I appreciate your letter. When I read your first few words, I thought you were going to yell at me for tentatively suggesting the connection between warmer ocean waters and global warming, which is not a scientifically proven point. The fact that this particular summer's tropical Atlantic surface waters were warmer than usual could have resulted from anomalies in ocean or air currents unrelated to global warming. As a staunch defender of science, I tried to stay accurate to the known facts: the connection has been suggested by some experts but remains unproven. In contrast, you are absolutely correct that global warming itself is a proven fact. Moreover, the overwhelming preponderance of evidence is that we humans have played a direct role in bringing it about. As I tried to stress at the end of my essay, I couldn't agree more that it is indeed time we demand that our politicians pay heed to this coming danger.

John W. Fitzpatrick
Louis Agassiz Fuertes Director
Cornell Laboratory of Ornithology

LIFE BIRD

What a thrill last Sunday! After 50 years of bird watching, I saw a bird I'd never seen before. There, just outside my kitchen window, was a wee olive-gray bird with a bright orange patch glistening in the sun. He flitted among the blue spruce branches that brushed my window, after perching on the sill peering in at me as if to say, "May I come and visit?" Meanwhile, his more modest mate with her brilliant yellow crown patch was feeding on the treats between the spruce needles. What a delightful pair. After five minutes or so they left to thrill yet another lucky bird watcher. Their trip from Canada to warmer climes was half over. November 7, 2004, will remain in my memory as that special day when I saw a pair of Golden-crowned Kinglets.

Ellen Vidal Hollmeyer
Chagrin Falls, Ohio

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

IN MEMORIAM

Charles E. Treman, Jr.

If you live in Ithaca, New York, and someone mentions birds, the first thing that comes to mind is Sapsucker Woods, second the Lab of Ornithology, and third Charles E. Treman, Jr. Why Charles Treman? Because his association with this organization is almost as old as the Lab, dating back to the 1920s when he and several school chums planted a grove of conifers in what became known as Sapsucker Woods. His involvement with the Lab continued to the very last day of his life this past September, when he asked his daughter, Terry Williams, to install new bird feeders outside his bedroom window.

Charles E. Treman, Jr., known to friends as Charlie, was a tremendously successful businessman, civic leader, and Cornell trustee. His family history is linked to Cornell and surrounding communities dating back to the 18th century. In fact, Trumansburg, a village near Ithaca, was originally called Tremansburg in honor of Charlie's great-great grandfather, a homesteader in 1792.

Birds captured Charlie's interest at a young age. He was a friend of renowned artist Louis Agassiz Fuertes, a disciple and student of Lab founder Arthur Allen, and a lifetime member of the Lab of Ornithology's administrative board. He and his beloved wife, Margo, loved feeding and watching their backyard birds. When he retired as president of Ithaca's leading bank, Tompkins County Trust, the institution endowed and named the Treman Bird Feeding Garden at Sapsucker Woods. Charlie and Margo visited the bird-feeding garden regularly, arriving in the late afternoon to take a seat and watch the birdlife outside. Few friends appreciated the comforts of the Lab's bird observatory more than Charlie and Margo. And no one appreciated the Lab of Ornithology more than Charlie Treman. In a 1993 letter to our board chair, Ned Morgens, Charlie waxed eloquently about his and Margo's long-term, productive association with the Lab, ending with a humble, "Truly, we have received more than we have given!"

Charlie Treman (right) with Lab associate director Scott Sutcliffe during the construction of the Johnson Center.

His humbleness notwithstanding, Charlie was generous with his time and finances. In 1999, he and Margo funded the first-ever graduate student fellowship at the Lab. In 2002, they funded the construction and provided an operating endowment for the magnificent new Treman Bird Feeding Garden. And the Tremans made generous provisions in their estate plans to support Lab programs in perpetuity.

We will miss Charlie as we have already missed Margo for nearly three years. Fond memories will endure forever and generation upon generation of students, visitors, and feeder birds at Sapsucker Woods will benefit from Charlie and Margo's beneficence.

Scott Sutcliffe
Associate Director

SCOTT SUTCLIFFE (2)

VICTOR EMANUEL RECEIVES ALLEN AWARD

This past June, the Lab of Ornithology presented its prestigious Arthur A. Allen Award to legendary birder and tour operator Victor Emanuel. The award was established in 1967 to honor those who have helped raise public awareness about birds and ornithology.

Victor Emanuel started birding in Texas 56 years ago at the age of eight. He is the founder and compiler for 40 years of the record-breaking Freeport Christmas Bird Count and served a term as president of the Texas Ornithological Society. Birds and natural history have been a major focus throughout his life. He derives great pleasure from seeing and hearing birds and from sharing with others these avian sights and sounds. He initiated the first birding camps for young people, and considers that to be one of his greatest achievements.

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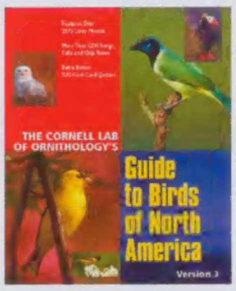
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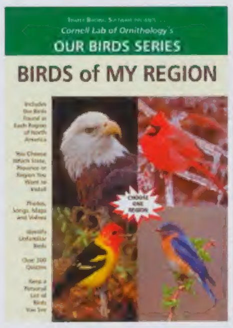
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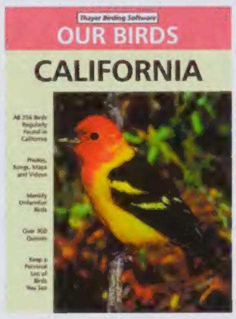
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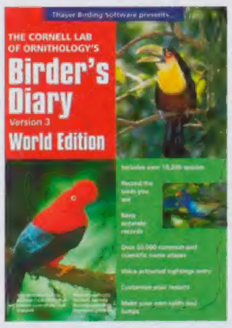
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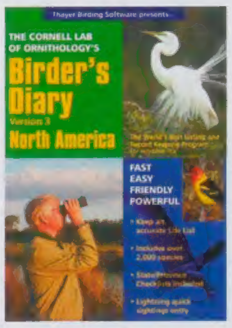
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EXPLORING RED SLOUGH

by Mel White

A May morning in east Oklahoma

With a rumble like faraway thunder, a flock of White Ibises lifts off from a shallow wetland, whirling in pied confusion before forming a ragged line aimed at the northern horizon. Ignoring the commotion, Great Egrets continue their slow stalking, and snowies their manic chasing of fish, crawfish, frogs, and whatever else the water hides.

Not far away, four men with binoculars stand on a levee, scanning a marshy impoundment. "Least Bittern!" one calls, and a tawny bird skims the tops of the cattails before quickly dropping out of sight. A Pied-billed Grebe laughs somewhere as two Black-bellied Whistling-Ducks fly by, white wing patches shining in the sun. The ducks give their odd twitters and wheeps as they head for a nearby lake, where several Anhingas perch in dead trees. Below, a female Wood Duck leads a brood of eight young across the water. Common Moorhens and Purple Gallinules, too, will soon be raising young here—if they don't fall prey to alligators.

None of these goings-on would be unusual in a Gulf Coast marsh, in Texas or Louisiana, say, but this happens to be a May morning in Oklahoma. Barely within its borders, true—just two miles from Texas and ten from Arkansas—but this is indeed the Sooner State, known for arid high-plains grassland and gypsum hills and the scrubby oak woods called the Cross Timbers.

Among biologists, conservationists, and birders, Oklahoma is also known for Red Slough Wildlife Management Area, a patchwork of creeks, wetlands, old fields, and woods covering 5,800 acres of flat bottomland just north of the Red River. Since it came into public ownership and conservation management less than 10 years ago, it's become home to a diverse, and surprisingly anomalous, array of wildlife.

David Arbour of the Oklahoma Department of Wildlife Conservation has been conducting weekly bird surveys at Red Slough for five years. On this coolish Monday, he's accompanied by Robert Bastarache, district biologist for the Ouachita National Forest, and Berlin Heck, the retired manager of nearby Little River National Wildlife Refuge. The mix of government agencies reflects the fact that Red Slough is an administrative patchwork as well as an ecological one.

"This was an operation called Push Creek Farm, growing mostly rice," Bastarache says. "The owner wanted it to go to a public conservation purpose. He wanted a price that would have been too much for acquisition, but in 1996 he got money for enrolling in the federal Wetlands Reserve Program." (The WRP pays landowners who allow property to be managed as wetlands while remaining in private ownership.) "The Conservation Fund later bought 3,855 acres and donated it to the Ouachita National Forest. They paid the difference between what the owner had already gotten through the WRP and the asking price, so it was more affordable. The Ouachita National Forest eventually bought the rest of the 5,814 acres."

The question that arises, of course, is: Why the Forest Service? Why not the U.S. Fish and Wildlife Service, which manages the country's national wildlife refuge system? The answer can be found, as is so often the case these days, in the compromises required by economic and political pressure. As Red Slough was being established, local cattle ranchers and poultry farmers were resentful of previous conservation-driven restrictions and worried about possible future regulatory actions. They found it easier to accept ownership by the Forest Service, under the Department of Agriculture, than by the U.S. Fish and Wildlife Service, under the Department of the Interior.

After protracted wheeling and dealing, and with the WRP in the picture, what transpired was a unique partnership: the Ouachita National Forest owns Red Slough, but the area is managed by the National Resource Conservation Service (formerly the Soil Conservation Service), the national forest, and the Oklahoma Department of Wildlife Conservation, in consultation with the U.S. Fish and Wildlife Service. The private hunting organization Ducks Unlimited also provides funding and management assistance. To complicate matters further, more than 2,000 adjacent privately owned WRP acres are included in the general Red Slough management plan. Nothing else like Red Slough exists in the national forest system.

With so many politicians today quick to blame environmentalists and "government interference" for everything from oil prices to the problems of disposing of pig manure, this sort of ad hoc conservation arrangement has become increasingly common. No doubt the bullfrogs and bitterns don't care which agencies' logos are on the uniforms, as long as they've got a place to eat, sleep, and raise young.

"The Willow Flycatchers are back!" David Arbour calls, immediately after spotting the Least Bittern. In 2001 he discovered the Empidonax breeding at Red Slough, considerably south of its main range; the call note he's just heard from a nearby willow-topped levee is his first record of the season. The flycatcher is one of several significant breeding species in the area, including Purple Gallinule (a nest at Red Slough in 2001 was the first confirmed in Oklahoma in 36 years), Black-bellied Whistling-Duck (its range has expanded north into the Red River area from central Texas), and American Bittern (another species south of its normal range), as well as Anhinga, Ruddy Duck, and Common Moorhen.

"We have possibly 20 pairs of King Rails here," Arbour says. "I talked to a researcher who said this is one of the highest populations in the interior United States.

"Our best shot at seeing a King Rail is going to be right over here," he says, pointing to an area of Pintail Lake crowded with cattail, rush, and American lotus. "We've got a pair nesting, and they usually show themselves." The birds don't appear this morning, though a series of *keks* proves their presence.

"We recently added a 160-acre tract of bottomland hardwoods where Swainson's Warbler nests," Arbour says, as the group climbs back into a national forest-owned Ford Explorer. Two recently sighted species, Greater Roadrunner and Bachman's Sparrow, have brought the Red Slough bird list to 272, including such rarities as Swallow-tailed Kite, Yellow and Black rails, and a vagrant Ash-throated Flycatcher.

Arbour's weekly surveys have made him intimately familiar with Red Slough's expanse, from seasonal changes to the details of daily life.

"Is the Killdeer nest still over there?" Bastarache asks, on a levee near Otter Lake.

"Naw, a coon got it," Arbour says. He knows where the alligators hang out, whether the Prothonotary Warblers have started nesting yet, and who's living in the Tree Swallow houses at Unit 21.

As the SUV bounces over the levees that define Red Slough's dozens of management units, the conversation illustrates how much of the area's operation revolves around practical matters: allocating people and money, keeping the tractors running, repairing gates. And though the banter is easygoing, it's obvious that there's a certain amount of dissension about Red Slough's purposes—if not in the Explorer, then in offices miles away.

In 2001, researchers found a Purple Gallinule nest at Red Slough—the first confirmed Oklahoma breeding record for this species in 36 years.

TOM VEZO

"Our goal is to manage for maximum diversity of wildlife," Robert Bastarache says. Some of those involved with Red Slough, though, see it as just another cog in the great duck-producing machine stretching from the prairie potholes of Canada to the hardwood swamps of the South. Arbour tries to make sure that the needs of nesting marsh birds, migrant shorebirds, and post-breeding waders are taken into consideration when schedules are made for draining and filling ponds and planting or clearing vegetation.

"They appreciate David because he's here and he knows what's happening on the ground," Bastarache says. "With 5,800 acres and four different agencies, there's a lot of coordination and cooperation that goes into it."

"A lot of frustration," Arbour quickly adds. "I tend to get real emotional about this place. We butt heads every now and then."

Complicating the situation is the current drought in Oklahoma. "We usually get 45 inches of rain a year here," Bastarache says. "It was about that for the first three years of the project. The past two, we haven't had that much, so it's changed the habitat, the bird populations, and the management. We have a very high evaporation rate here in the Oklahoma heat and wind."

"Crawfish production is important," Arbour says. "That's the main food source for the birds here."

"Winter rainfall is the determining factor for many species, and for many management issues," Bastarache says.

The Explorer stops on a willow-lined levee beside Unit 14, and all pile out to look for migrant songbirds. Soon, Berlin Heck spots a small bird flitting from tree to tree. After a little stalking, an ID is confirmed: it's a female Cerulean Warbler. Arbour is excited about the find.

"That's one of the last warblers I'd expect to find here," he says. "That's 273 species for Red Slough."

Three months later, the Oklahoma corn that was a foot tall in May is over head-high, and the fog is thick on an unusually cool midsummer morning. At dawn, David Arbour has set up a spotting scope on an observation platform beside Unit 44. Not much can be seen yet, but sounds drift in from all around: the squawk of a night-heron, the whistle of a Greater Yellowlegs, the chips of an early-rising Northern Cardinal, the tinking of Blanchard's cricket frogs like Geiger counters in the marsh.

At this season, Arbour begins his survey by watching the flight of waders leaving Ward Lake, a wetland a mile east with abundant dead trees for nighttime roosting.

"It's starting," he says, as a Little Blue Heron appears, followed by another, and a group of five, all materializing out of the fog. "Watch these for that tricolored," he says, referring to an out-of-range heron present the previous week. Then, "Here come the first ibises," as a flock of White Ibises, adults and young, flies over. Great and Snowy egrets and Great Blue Herons join the parade, dozens of birds, but Arbour is disappointed that the numbers are so much smaller than a week ago.

"Yeah, something's happened to our birds this morning. I think there are some oxbow lakes down on the Red River that are getting low and competing with us."

Shortly after the Cerulean Warbler, he added species number 274 to the Red Slough list—a Canada Warbler—and he's been busy keeping up with the breeding birds in the area: two Willow Flycatcher nests found and a total of 10 territorial pairs, for example, and King Rails leading broods on walks from one marsh to another.

Arbour's truck pushes through giant ragweed to Unit 52, where the shallow water is dotted with adult and young Pied-billed Grebes and Common Moorhens. "Of all the units, this is by far the best for breeding," he says. "There are more nesting birds here than in all the rest of the units combined. I call this the Brood Pool. There's way more moorhens here than you can see. Before the vegetation got so high, there were 15 pairs, and each pair had five or six young."

Two dozen Black-bellied Whistling-Ducks loaf around the edges of the wetland, or take off for circling flights, landing again to bicker and engage in brief wing-flapping quarrels. "I never get tired of seeing that bird," Arbour says. "They seem so out of place here."

At a call from the marsh, Arbour says, "There's our Least Bittern, finally." An American Bittern and a juvenile Purple Gallinule were present the week before, but neither shows itself today. He drives west to meet Robert Bastarache, and the two take Blackland Road to Unit 7, to check on more birds that seem out of place in the Red River bottoms of Oklahoma.

Six Roseate Spoonbills—one roseate colored, four pinkish, and one barely a shade past grayish-white—perch in low trees near the levee. As the truck approaches they fly a short distance to the edge of the pool, where three of them pick up sticks and begin bowing to each other. Now and then they drop the sticks to clap their bills. No doubt this courtship practice will be put to use next spring, somewhere on the Gulf Coast. The Wood Storks that accompanied them last week have wandered elsewhere, but 50 or more southbound sandpipers—Stilts, Spotteds, Pectorals, and assorted peeps—have paused to feed.

Back eastward, at unit 16, juvenile Snowy Egrets (some of the 278 Arbour will count today) crowd together on branches sticking out from a brush pile, resting in the midday heat. Though the day started cool, the forecast is for 94 degrees—more typical of an Oklahoma summer, for sure, than flirtatious spoonbills and fledgling gallinules.

"Look, here's our gator," Arbour says, pointing to the borrow ditch paralleling the levee. The eyes and nostrils of a small alligator protrude above the brown water, the body and tail showing just under the surface as it slowly propels itself forward. Gators add considerable interest to the Red Slough environment, though nobody knows exactly how many there are or how they got here. Some undoubtedly occur naturally, since the species thrives a relatively short distance down the Red River in Arkansas. Some "problem" gators have been relocated from populated areas, and still others have been released after being confiscated in drug raids. (Apparently an alligator is considered a more effective watchdog than a pit bull at a truly up-to-date methamphetamine lab.)

Here and there a few Blue-winged Teal swim slowly along the edges of the impoundments, the first of the migratory ducks that will arrive over the next few months. With them will come the inevitable complaints from hunters that many wildlife-area managers must deal with: too much water, or not enough; too difficult access, or too easy; too much vegetation, or not enough; too early a season, or too late—as if Red Slough existed solely to provide recreation for a few weeks in the fall; as if rain could be requisitioned from a central warehouse.

Bird watchers complain, too, about locked gates and restricted access. Right-wingers complain about more private property being taken over by the feds. And the different agencies involved in management struggle to find compromises on issues large and small.

Meanwhile new generations of herons and egrets learn to catch crawfish, and Prothonotary Warblers and Painted Buntings prepare to leave for Central America, and flocks of sandpipers passing overhead spot the shimmer of mudflats and drop from the sky in search of bugs and worms. For people who care about the future of wildlife, Red Slough offers the hope that these and hundreds more species will find, season after season, a new and secure home in the Red River bottoms of Oklahoma. ■

Postscript: On September 8, David Arbour found Oklahoma's first Least Grebe on Red Slough's Unit 48. The bird stayed at the impoundment for three weeks. The record brought Red Slough's cumulative species list to 278.

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TREETOP ENCOUNTERS

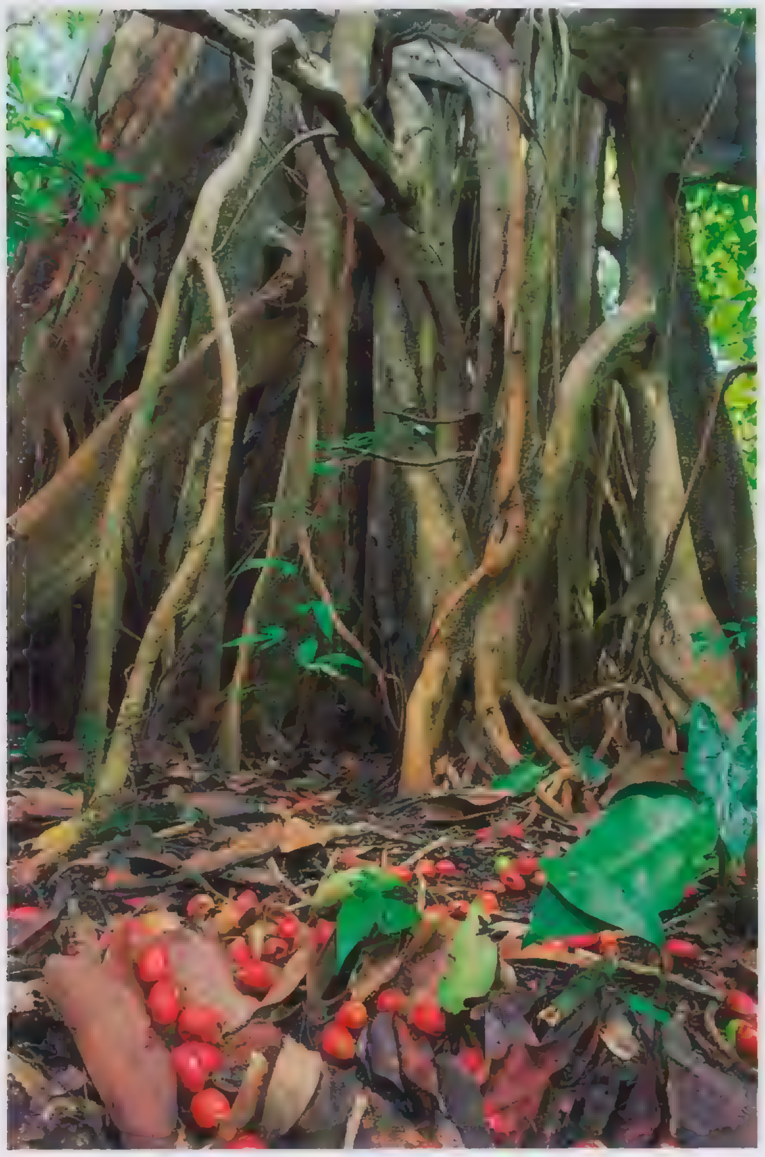
TEXT BY TUI DE ROY
PHOTOGRAPHS BY TUI DE ROY AND MARK JONES

In the canopy with the hornbills of Sulawesi

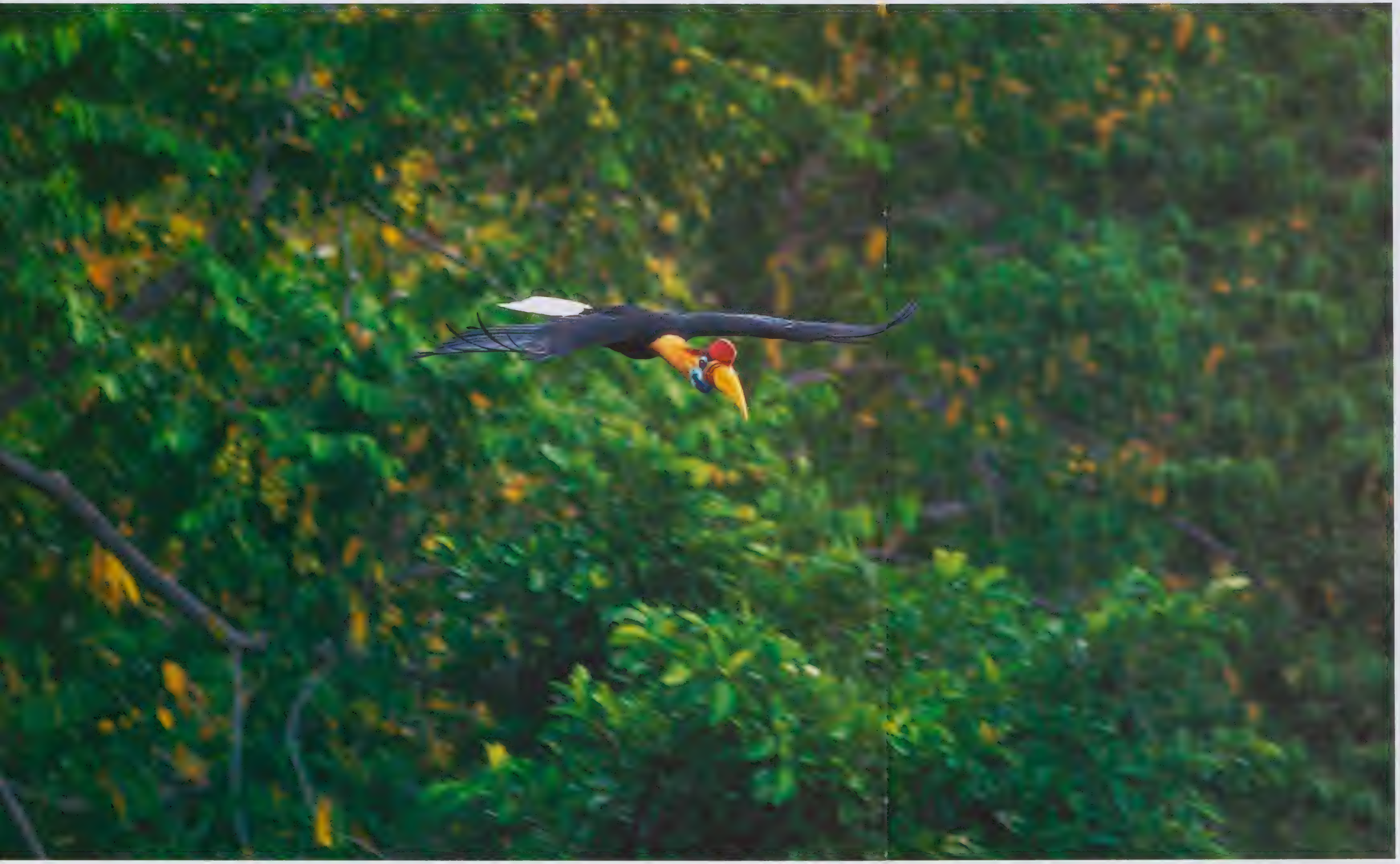
We quietly padded through the damp leaf litter on the rainforest floor of coastal Sulawesi, one of the northern islands in the vast archipelago that makes up the Republic of Indonesia. The musty smell of a myriad invisible rainforest organisms, from fungi to forest pigs, mingled with the sweeter scents of fruit, flowers, and foliage in the 150-foot-high canopy. Streaks of hot tropical sunshine slanted down through windfall gaps, illuminating giant buttress roots. Every few steps I whispered questions to my friend Margaret F. Kinnaird, field researcher for the New York-based World Conservation Society, drinking in her vast local knowledge. This was my first day out and my very first experience photographing in the tropical rainforest.

Suddenly, harsh barking erupted overhead, like an angry guard dog coursing through the sky, unseen beyond the foliage. We froze; Margaret smiled. "Hornbills!" she said. "You can hear the two-tone bark, a pair calling in cadence, probably heading for a fruiting fig tree."

As the huge birds passed just above, their barks made way for an even more startling sound: *Woosh-woosh-WOOSH-WOOSH-WOOSH-woosh.* "Like a steam



When the juicy fruit of a fig tree becomes ripe, dozens of hornbills often show up to partake in the bounty. At right, a breeding male Knobbed Hornbill on the island of Sulawesi.



Weighing about six pounds, the spectacular Knobbed Hornbill is found on the island of Sulawesi in northern Indonesia. The birds use their long bills like forceps to pluck fruit from trees.

engine," a friend once accurately said of the unbelievably loud noise, which stems from an aberration in hornbill wing design. Unlike the underwing coverts of other birds, which streamline the wing and allow for a smooth airflow, a hornbill's don't cover the quills at the base of its flight feathers. As a result, the wind rushes through the gaps in its wings, making a sound so loud it can be heard up to half a mile away.

Awestruck, we resumed our walk uphill in the direction taken by the hornbills. Soon more wooshing and barking rang out in the distance. As we approached a particularly large, gnarly tree, an explosion of sounds jolted the air and nearly made us duck. Flashes of black wings, white tails, orange beaks, and red, blue, and yellow heads sparkled through the canopy as 30 or more huge startled birds took off in all directions far above.

> *A hornbill's underwing coverts don't cover the quills of its flight feathers. As a result, the wind rushes through the gaps in its wings, making a sound so loud it can be heard half a mile away.*

Fifty-four species of hornbills exist worldwide, in areas ranging from the dry savannas of southern Africa through India and the lush forests of Southeast Asia eastward to New Guinea and the Solomon Islands. Although they vary in size—some as small as a dove, others as large as a turkey—all of them share absurdly large bills, which they use like forceps to pluck their food. At about six pounds, the Knobbed Hornbill is one of the larger types. The red-nobbed race of this species, endemic to this orchid-shaped island just south of the Philippines, is certainly one of the most stunning in color.

Margaret and her husband Tim O'Brien spent several years studying the ecology of a tiny remnant tract of lowland tropical rainforest set aside by the Indonesian government as the Tangkoko-Duasadara Nature Reserve, surrounded by a sea of coconut plantations. Of the many fruit eaters whose habits they analyzed, the Knobbed Hornbill stands out as a remarkable disperser of rainforest trees, regurgitating large seeds from the fruits it has eaten and passing smaller ones unaffected through its droppings. By capturing wild birds with nets set in the canopy and fitting the birds with radio transmitters, they found that the hornbills may fly up to 20 miles in search of food, even locating isolated wild fruiting trees alongside roads or in agricultural plots. Hornbills can therefore be regarded as the lifeblood of a healthy forest, regenerating it by spreading seeds far and wide and helping to support the other species that depend on it.

On that day, an obsession took hold of me: I had to find a way to share the treetop world of these outrageous-looking birds. The ground where we stood was littered with thousands of oblong red figs, knocked down by the hubbub of activity above. Individually, these giant trees may fruit only once a year, when upwards of 100,000 juicy figs ripen within just a few days of each other, attracting dozens of hornbills and other fruit eaters to the bonanza. If only I could get up into those laden branches 100 feet or more above ground, what an amazing sight this would be. But it takes only two or three days for a tree like this to be stripped bare, at which point the feeding frenzy moves on to some other tree coming into season elsewhere in the forest.

Under Margaret and Tim's patient tutelage, my partner Mark Jones and I spent the next two months learning the tricky art of setting up climbing ropes high into the boles of giant rainforest trees, then improvising blinds perched on flimsy looking branches at dizzying heights. We found a whole new world that we

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Author Tui De Roy (below) uses a slingshot to shoot a small weight tied to a string over a lofty limb. She will then haul up a climbing rope and use it to ascend into the canopy.

had never imagined—the world of hornbills and other seldom-seen canopy wildlife.

Every morning before dawn, we would leave the cozy little research station tucked among the trees along the seashore and head into the forest. With climbing rope and hardware slung over one shoulder and camera gear over the other, we had sweat dribbling down our backs within five minutes of setting off. We scoured the forest for sounds of hornbills and monkeys leading us to just-ripening fig trees. Then began the arduous process of locating an angle for a clear shot at a sturdy branch high above. We taped a fine kite string to a weight and attempted to shoot it over the branch with a slingshot, with the remaining 300 feet or so of string carefully spread on a blanket on the ground. Hour after hour we took turns repeatedly straining the rubber sling—and our aching arm muscles—close to the snapping point, aiming carefully between tiers upon tiers of overlapping foliage, only to watch helplessly as the precious projectile bounced off tree trunks and careened out of control through the dark thickets. Sometimes the string wrapped itself irretrievably around the viciously hooked spines of rambling rattan palms; other times a gust of wind deflected it before it was even close to its target.

Then at last a lucky shot. The weight and string sailed clearly over the intended branch and back down to the ground. Now we quickly attached a parachute cord to the lightweight string and hauled that up. The climbing rope followed, and at last I was ready—harness and safety straps buckled on, clips and carabiners, rope ascenders and descenders all clanking around my waist and chest. My feet cinched into webbing slings, hands grasping the ascending cam handle, I departed the ground with barely containable excitement, using a pumping motion between my arms and legs to climb higher. Spinning around as the rope stretched, I felt like a spider dangling from her gossamer thread. I had to tell myself not to look down, but even so I could feel my tension mount uncontrollably.

Suddenly I emerged into another world, a setting where gravity is something I'd rather not give much thought to. I had swapped the claustrophobic gloom of the forest floor for a brilliant sunny sky, as if the clock had suddenly skipped from early morning to midday. I also noticed it was hotter and drier here, the foliage around me dense and brilliant green, not dark and dank and lanky anymore. Through a gap in the trees I could even see the calm blue sea stretching away to the horizon—an amazing sight from the rainforest.

When I finally reached my destination at 120 feet above ground, though, I was disappointed. Only a few withered, rotting figs and dropping-splattered leaves remained to show that the hornbills had moved on to more bountiful smorgasbords. Only the hum of sweat bees and bloodthirsty midges broke the silence. Clearly it had taken far too long to get set up in this tree.

Days and weeks followed. With practice,

On that day, an obsession took hold of me: I had to find a way to share the treetop world of these outrageous-looking birds.

we got better at gauging the "climbability" of individual trees and quicker at setting up the ropes. Tiny mites infested our clothing as we worked on the forest floor, and swarms of attacking canopy ants scrambled down the ropes to meet us. While dangling in midair, I needed to saw off tangled branches at arm's length, and heavy rain showers sometimes prevented me from climbing on slimy ropes.

At last, one fine morning I found myself tucked into my tiny green nylon blind 135 feet up by the time the first golden sunrays caressed the crown of a magnificent fig tree laden with purple-ripe fruit. My perch was comfortable, at least as treetops go: two 8-inch horizontal branches above each other served as both seat and secure foot rest. As I glanced down, I noticed a slight breeze causing my tree to twist and sway. This is what it must be like for an ant gazing down a wet noodle, I thought.

My reverie was rudely interrupted by a loud *Aarf, aarf, aarf* as a bird came swooping in behind me. This time the wooshing of great sweeping wings sounded so close I felt like they were about to knock me off my perch. I watched a splendid pair of hornbills in breeding colors land in my narrow field of view—black bodies, long white tails, intense blue faces, and brilliant orange scythe-shaped bills, which both the male and female share. As if this gaudy color arrangement were not enough, the male had a bright red beacon of a knob on his head, and yellow and rufous neck feathers. In fact, the female would have shared his colors when younger, but this was nesting season, so she had changed to slightly more humble hues.

As the first hornbills at the tree this morning, this pair did not start feeding right away, but took careful stock of their surroundings. I watched their behavior with fascination. Perching very still, they lowered their heads and scanned the view slowly, long eyelashes batting. More barks announced other arrivals, mostly in pairs. Soon the tree was alive with big birds hopping heavily about, systematically plucking juicy fruit and throwing them back one by one into cavernous beaks. When they

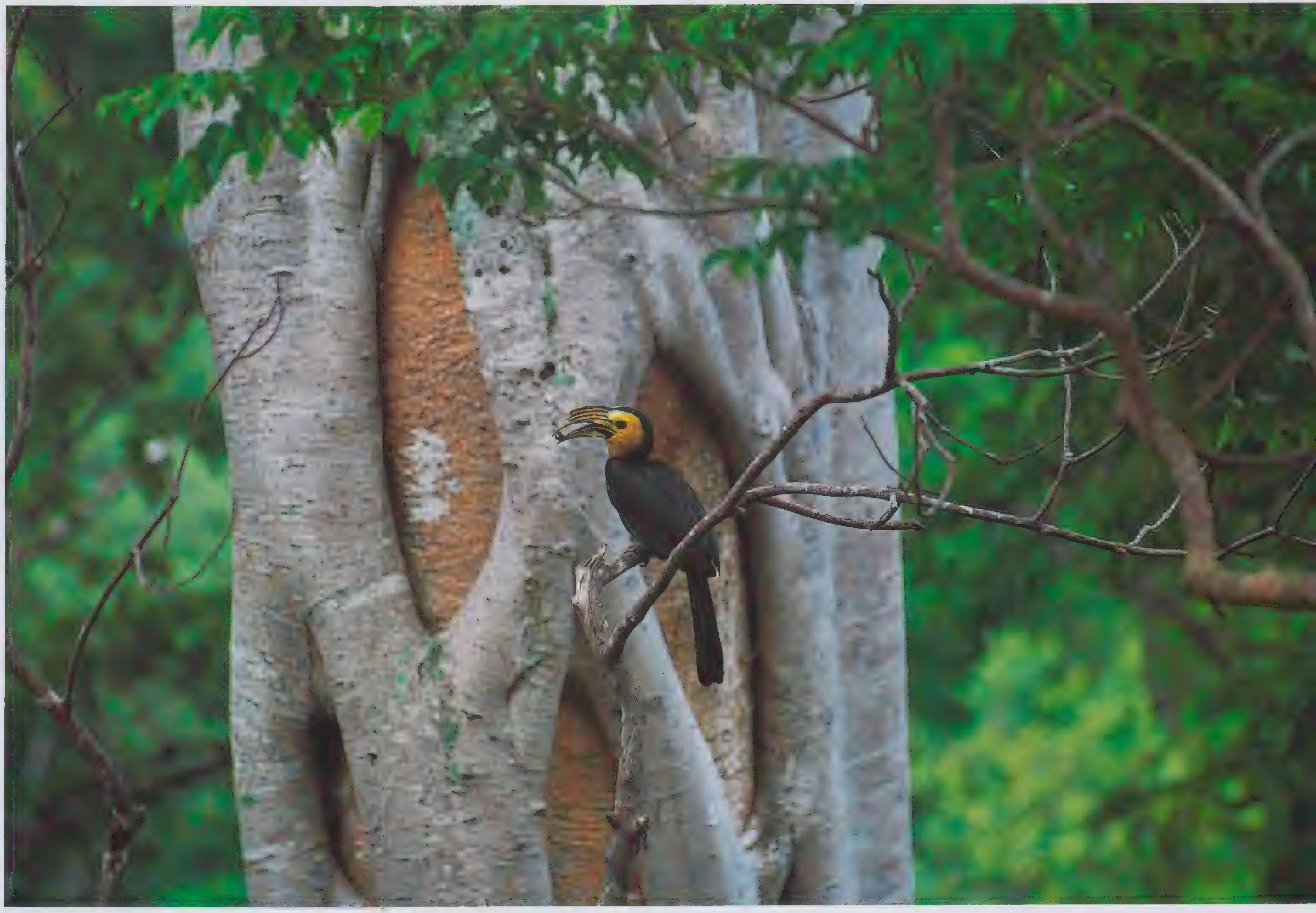
The view from above. The author and her partner had to climb to dizzying heights each day to get eye level with the hornbills.

could eat no more they continued loading more fruit into pendulous throat pouches of bare, powder-blue skin to eat later.

The suffocating heat of noon brought a lull to all rainforest life, and many hornbills settled on the shady inner branches of the fig tree, mates quietly preening each other or showing off by raising their long spiky head feathers. Occasionally a male would roll intact fruit from his pouch into the tip of his long beak and pass them daintily to his mate, who accepted with satisfied groans. This gesture seemed to reinforce his lifelong devotion to her, and no doubt conveyed the message that he was willing and able to provide for all her needs and those of their offspring during the coming months. Soon she would incarcerate herself willingly into a deep tree cavity, which she occupies every year, using crushed fruit and droppings to cement an adobe-hard door with only a narrow slit for her mate's faithful food deliveries.

All day I sat motionless, mesmerized by the insights I was getting into the hornbills' private

An adult male Sulawesi Hornbill (at right) perches in front of a fig tree, where his mate sits in their nest cavity. Below, a hornbill nest tree.



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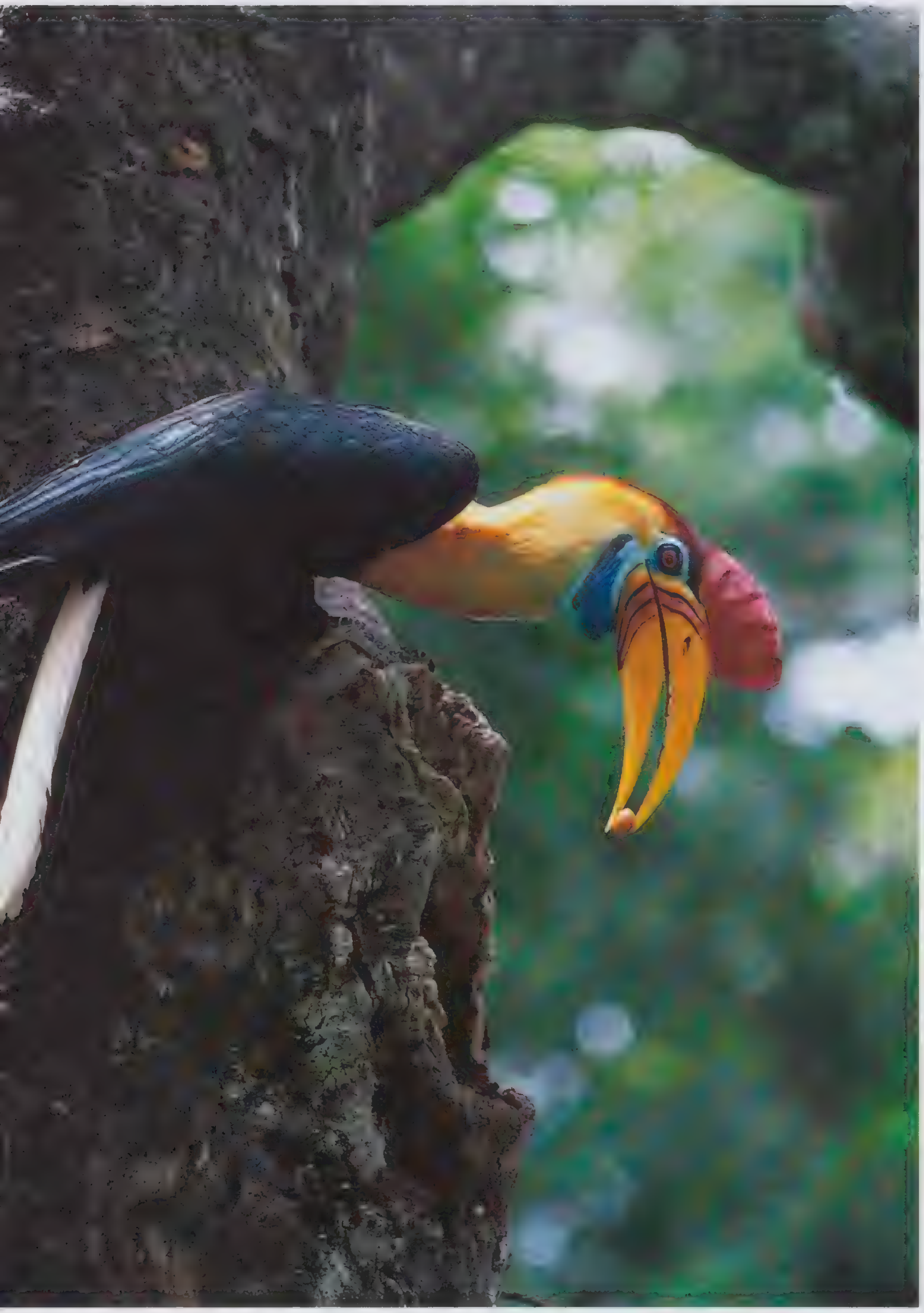


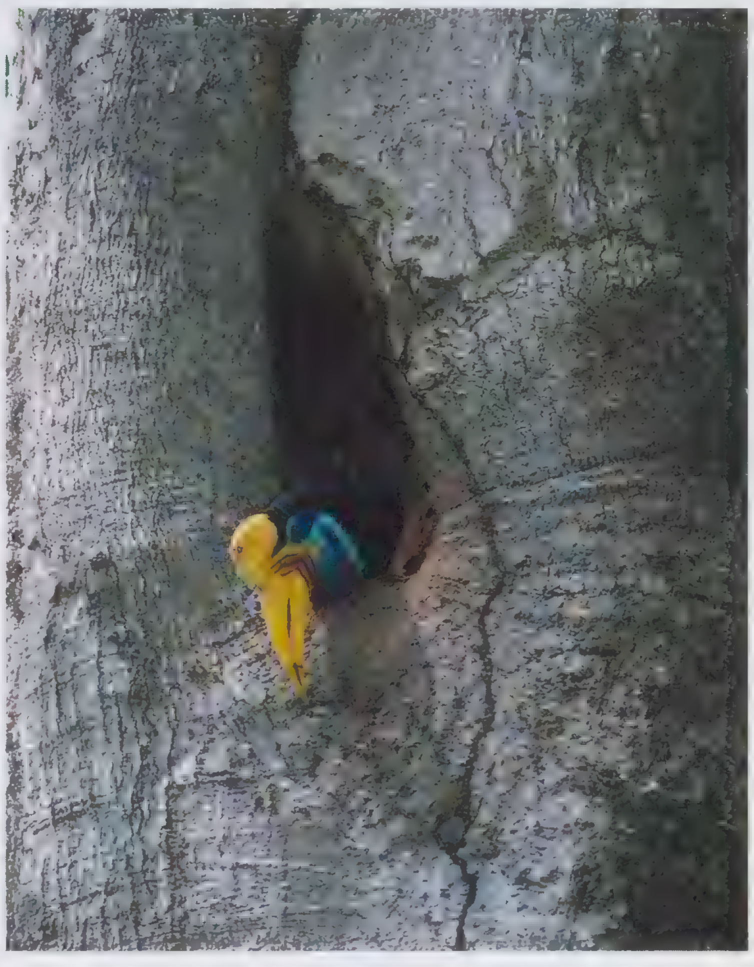
A female Knobbed Hornbill (at right) takes a final look outside before sealing herself into the nest cavity for four months. Above, a male hornbill feeds figs to his mate in the nest cavity.

lives. Though they were mostly quite sociable, I saw two males clash with open beaks, which may explain why their bills are often chipped. Only when the brief tropical dusk descended on the forest, and I had long since shot every roll of film I was carrying, did I slip down my rope to walk the three miles back to the shore in failing light, stiff-jointed but heart aglow.

The hornbill's nesting season was well underway by the time we prepared to leave Sulawesi. I watched one female go through the long tedious work of sealing herself into her nest hole. For hours she built up the layers of fruit-based mortar to narrow down the entrance. When it was almost closed she squeezed her head and shoulders out and took one long, last look at the surrounding forest, staying motionless for a whole hour before resuming her task. Here she will lay and incubate her eggs, keep the nest clean, protect the chick, and molt all of her flight feathers. Then one day, after three to four months confinement, she'll hammer open her door and escape to help her mate meet the demands of their growing chick, which will reseal the nest until fledging another month later.

But what future do the Sulawesi hornbills have in an insular nation with two million human inhabitants making ever-deeper inroads into its rainforest resources? While I sat in another blind watching a stupendous male hornbill deliver fruit to his nest-bound mate, the sound of working chainsaws droned continuously in the distance, eroding away at the boundaries of this tiny tract of barely protected rainforest. To seaward, the muffled booms of dynamite fishing spoke of similar pressure on the fringing coral reef. Fire has since made terrible inroads into this shrinking pocket of wilderness. Wildlife conservation is an unwelcome concept where a burgeoning human population is striving to improve its living standards. Yet one thing is certain: by dispersing the seeds of rainforest trees over long distances, Sulawesi's Knobbed Hornbills, if given the chance, will be the first species to help man heal the scars of thoughtless deforestation. ■

Tui De Roy and partner Mark Jones have since taken their climbing skills to other rainforest realms, but their Indonesian experience was their all-time favorite. Their quest for unusual wildlife has taken them from the Arctic to the Antarctic, the Andes to the Amazon.



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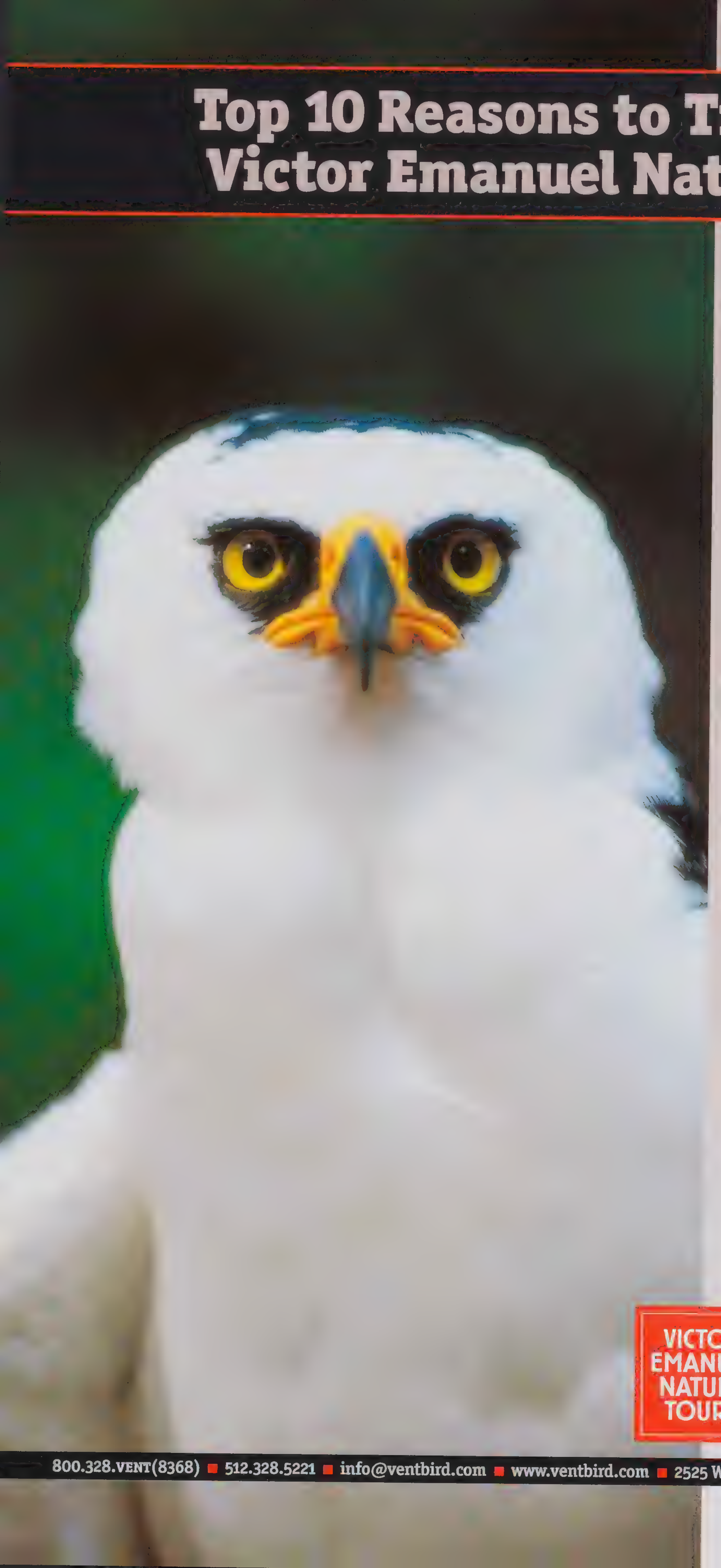

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AN AUSSIE BIRDING PARADISE

TEXT AND PHOTOGRAPHS BY GEORGE OXFORD MILLER

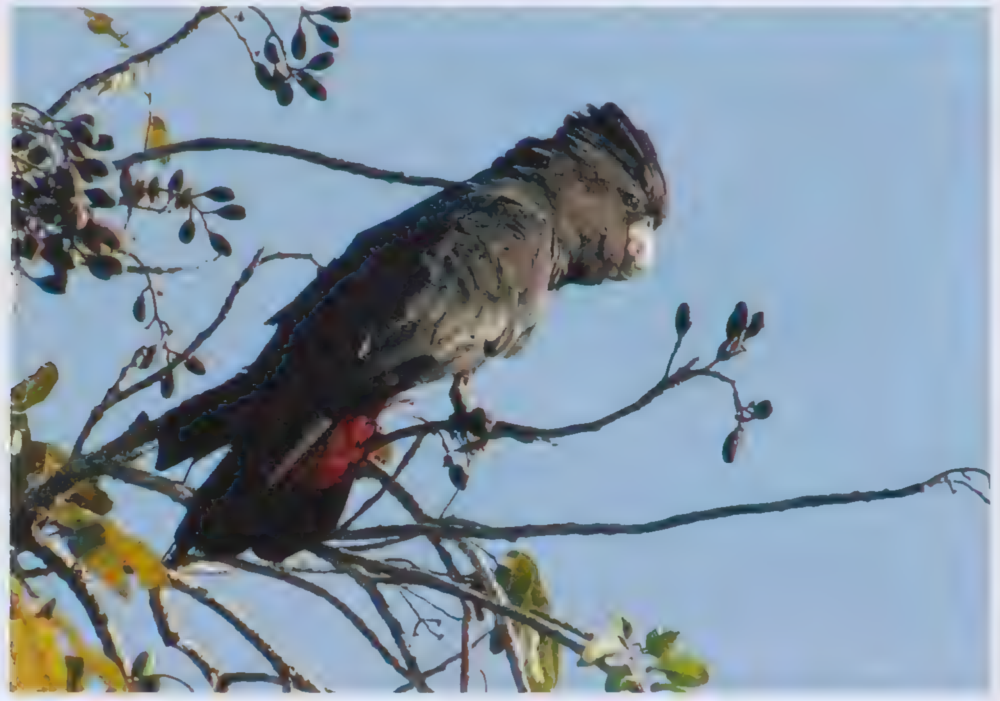
Australia's Top End harbors the most diverse collection of birds in the Land Down Under

All day long we've seen flocks of snow-white Sulfur-crested Cockatoos, but now a dozen midnight-black cockatoos fly overhead, shadowy streaks across an unmarked blue sky. With rounded heads and stubby wings, they look prehistoric, as though just released through a time tunnel. Their nightmarish screams add to the surreal impression. They bank to land in a leafless tree and flare their fan-shaped tails. Fiery scarlet patches on their black tail feathers flash like laser pointers. The Red-tailed Black Cockatoos noisily jockey for position on the limbs.

The bizarre cockatoos are just one example of the creativity of natural selection in Australia's flora and fauna. When the supercontinent Gondwana began breaking up 130 million years ago, Australia drifted north. During 55 million years of isolation from mainland influences, endemic groups of parrots, pigeons, owlet-nightjars, cassowaries, and thick-knees developed. Today, Australia boasts 760 species and 88 families of some of the world's most varied birds. A full one-third of the bird species in Ozland can be found in the Top End, the panhandle of the Northern Territory.

Red-tailed Black Cockatoos have been our daily companions since we arrived in Kakadu National Park, 150 miles east of Darwin. Though endangered in most of the country, the screeching birds wake us in the morning and tuck us in at dusk. The raucous calls of Blue-winged Kookaburras and Little Corellas add to the treetop cacophony. In contrast, a variety of honeyeaters, whistlers, orioles, and flycatchers serenade us all day with melodious songs.

The Ramsar Convention, an international treaty on wetland conservation, lists Kakadu National Park for its globally critical wetlands, and UNESCO rates it as a World Heritage Site for both its pristine nature and aboriginal culture. Some 275 bird species, 64 mammal species, 128 reptiles, and 5,000 documented aboriginal rock art sites occur within the boundaries of the 7,720-square-mile park.



Although the Red-tailed Black Cockatoo (at left) is extremely rare in most of the country, the author saw raucous flocks of the birds daily on his visit to Kakadu National Park.

Six major ecosystems and the entire watershed of the monsoon South Alligator River system make Kakadu Australia's largest and most diverse park. Kakadu, the proposed Mary River National Park, and Arnhemland, the aboriginal-owned homeland, preserve more than 45,000 contiguous square miles of pristine wilderness. No cities, no cattle, and only 16,000 residents in scattered communities occupy an area the size of Pennsylvania.

Billibongs, such as the one above at Kakadu National Park, are seasonal lakes formed by cutoff streambeds. They act as magnets to birds and other animals during the dry season.

From our base at the privately owned Mary River Park, a lodge on 500 acres between the Mary River and Kakadu, we explore the varied habitats that make the birdlife in the area so rich. Each year in August, coinciding with the end of the dry season when millions of birds concentrate around the remaining waterholes, the lodge sponsors a birding festival. Regional experts visit as guest speakers and field trip leaders. Lodge owner Mike Ostwald, one of the leading birders in the Top End, conducts our daily excursions.

Life in the Top End, for humans and birds, revolves around the two seasons—the wet and the dry. From November to April, monsoon rains flood the countryside with 60 inches of rain. Streams pouring off the Arnhem Escarpment create spectacular waterfalls. The 375-mile-long sandstone ridge rises 800 feet above the floodplains and hems in the rising water. Rivers surge 30 feet high and turn the flat plains into millions of acres of wetlands.

In the dry season, from May to October, blue skies dominate. In Kakadu National Park alone, three million water and wading birds flock to the rich supply of fish and vegetation exposed by the receding waters. By August and September, massive flocks of birds congregate in the remaining marshes, lagoons, and billabongs (cutoff streambeds that create seasonal lakes). Many of the estimated 6.5 million shorebirds that migrate from their subarctic breeding grounds make first landfall in Kakadu.

Maria Bellio, with the Environment Risk Assessment Division of Australia's Department of Environment and Heritage, joins us for a day. Her passion for the resident and migrating shorebirds matches her expertise as an

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ornithologist. Because the remote coastline of Kakadu National Park is accessible only on multi-day excursions with four-wheel-drive vehicles, we sample the shorebirds on the beaches around Darwin, the gateway town to the Top End.

We set up our spotting scopes at Buffalo Creek Nature Preserve and focus on a flock of Red-capped Plovers. Hundreds line the beach at high tide and flocks continue to arrive. Lesser and Greater sand-plovers and Sanderlings join the mix.

"Shorebirds are the most beautiful birds in the universe," Maria exclaims. "The more you study them, the more amazing they are. Many migrate to Australia from their breeding grounds in Siberia and Alaska. Their internal organs shrink and all their energy goes into their muscles. Bar-tailed Godwits fly from Alaska to Australia in one flight, and they don't even get frequent-flyer miles!"

A jogger who trots past without breaking stride advises, "There's a Beach Stone Curlew down the beach." I received a similar tip in a park when a passing lady pointed out a Blue-winged Kookaburra. I mention to Maria that few people back home recognize more than pigeons and House Sparrows.

"People in Australia live closer to nature and can identify most of the common birds," she says in her unique Aussie-Italian accent. "Compared with Europe, Australia is paradise with so much nature. I migrated from Italy 14 years ago." She pauses for a beat. "But unlike shorebirds, I didn't lose any weight."

Maria scans every bird in the flocks that land on the beach. The Australian flyways often produce surprises. Last year she shocked the birding community when she spotted a Northern Pintail. She uncovered a more stunning discovery on a beach in the state of Western Australia. "We thought the Australian population of Oriental Pratincoles was about 250,000," Maria says. Her green eyes glitter as I wait for the punch line. "Then one day we found a beach in Broome with 2.5 million pratincoles. We just don't have enough money and resources, or bird watchers, to monitor the flyways, and much of the Top End is inaccessible."

After scrutinizing the beach and mangrove-lined Buffalo Creek, we head for Kakadu with several stops along the way. Howard Springs Nature Park, a natural outflow in a dense monsoon forest, was developed originally for military recreation. Now, the park preserves 700 acres of pristine riverine and woodland habitat. We park, and before we can get out of our van, a flock of Australian Ibises surrounds us. With eerie glares they wait expectantly for handouts, then step aside and follow us stiff-legged to the spring site. A tree full of white Little Corellas screams at our arrival and two five-foot monitor lizards glare at us with beady eyes. I feel like an intruder in the Garden of Eden.

A one-mile loop leads through the eucalyptus-pandanus forest. The dramatic woodlands harbor two secretive birds along the stream. The Orange-footed Scrubfowl proves easy to find. This member of the megapode family builds huge mounds of leaves and soil to incubate its eggs. One 3-foot-high, 12-foot-diameter mound is right beside the trail. Several deep holes in the mound indicate either the birds' efforts to regulate the incubation temperature or the result of marauding monitors. The chicken-sized scrubfowls creep unconcerned through the undergrowth.

The ground-dwelling Rainbow Pitta proves a more difficult quarry. The robin-sized bird earns its name with a black belly, green back, fluorescent blue shoulders, and a red rump. After creeping along the trail and searching the thick vegetation along the stream, we finally find the colorful bird at the forest edge. Its rump flashes like a blinking traffic light every time it bends over to peck in the leaves.

Our survey of Top End ecosystems continues at Fogg Dam, an impound-

An Australian Darter (below) perches on a limb at the edge of the river. A relative of the Anhinga, this bird preys on fish and amphibians and may be one of the species impacted by the spread of the cane toad, an exotic species that is poisonous to any predators that consume it.

ment built in 1950 for a rice-growing project. The half-mile-long, 20-foot-high earthen dam bisects a floodplain and creates a permanent wetland area. The intention was for one side to store water to irrigate rice fields planted on the other side, but the concept didn't take into account the hordes of Magpie Geese that consider rice to be manna from heaven. In three years the project folded.

Unlike most ill-conceived projects that modify the ecology, Fogg Dam turned out to be a boon for wildlife. We drive the one-way road over the dam with frequent stops to see Comb-crested Jacanas, Royal Spoonbills, Pied and Pacific herons, Black-necked Storks, and a Wandering Whistling-Duck with babies.

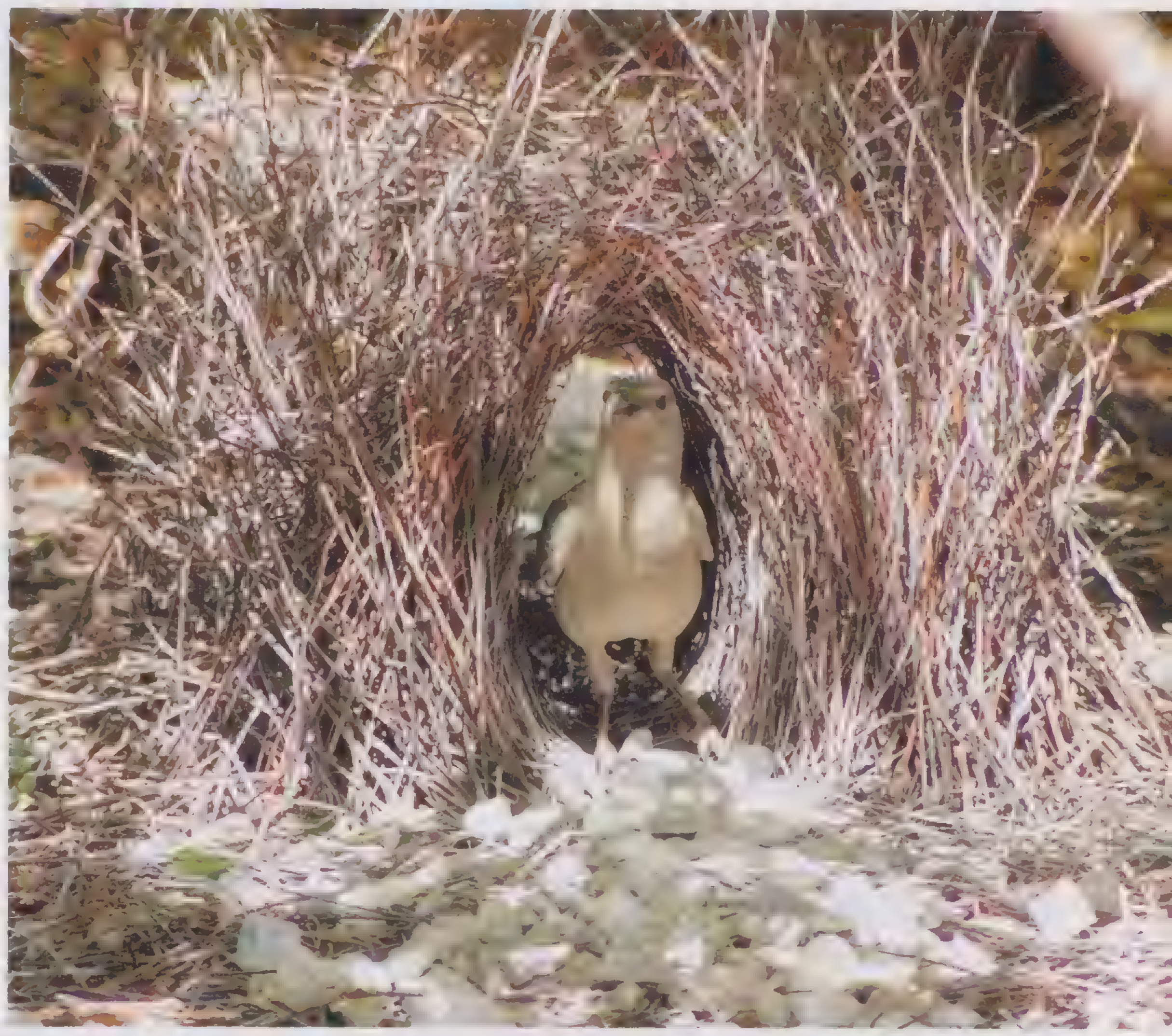
Other habitat-changing projects have proven disastrous to the wildlife in the Top End, especially the introduction of foreign species. *Mimosa pigra*, or giant sensitive plant, escaped from the Darwin Botanical Gardens in the 1800s. It forms thorny, impenetrable thickets that displace wild food plants from the floodplains. Pasture grasses have spread to the open woodland ecosystems. Without annual burning, they choke the savannas with dense stands of 10-foot-high growth.

The government spends $4.5 million (Australian) annually to manage the mimosa, a native of the tropical Americas. "Mimosa can cover seasonally flooded grasslands with 10,000 plants per hectare," says Steve Wingrave, regional weeds officer for the Department of Environment and Heritage. "It totally replaces native plants and also provides cover for feral pigs, which cause extensive damage to the habitat."

Fourteen insects from the mimosa's native range have been introduced to slow the plant's spread. Two beetles appear somewhat effective. "One mimosa can produce 250,000 seeds annually," Wingrave says. "It's spread to 14 of the 26 river basins in the Top End and infested about 10 percent of the wetlands. There's a strong correlation between high-density infestation and land management for cattle pastures. Now, it's being held in check by luck as much as anything."

Conflicting management practices for cattle and wildlife present ongoing problems. "Introduced pasture grasses spread to the wetlands and woodlands and displace the food plants for wildlife," Wingrave says. "We need to work out the problems of containing the pasture species before introducing them."

One night while camping in Kakadu, I hear a rustle in the bushes. The beam of my flashlight reveals a large brown toad, another pernicious introduction to the island continent. The cane toad occurs naturally from south Texas to South America. In the 1930s, the sugarcane industry introduced the toad to the Caribbean, Hawaii, and Australia in an attempt to control beetles whose grubs eat sugarcane roots. The prolific toads lay up to 35,000 eggs twice a year. With no natural enemies, they invaded the new landscapes like a storm tide, but they showed no interest in cane beetles. Within five years, the sugarcane industry developed an insecticide to control the beetle and lost interest in the toads.



A common resident of northern Australia, the Great Bowerbird builds a pass-through bower usually composed of two rows of sticks pushed into a platform of twigs. The males often decorate the front of the bower with brightly colored objects to attract females.

From its start in Queensland in 1935, the cane toad expansion front reached the Kakadu wetlands in 2001. "The toads have poison glands that kill any animal that eats it," says Keith Saalfeld, a wildlife manager for the Department of Environment and Heritage. "All stages—eggs, tadpoles, and adults—are poisonous. We can expect to see declines in vulnerable species such as the Black-necked Stork and Brolga. We presume that Darters, egrets, and any other bird that eats amphibians will be impacted. Snakes, monitors, and the northern quoll (a marsupial predator) are particularly vulnerable. The quoll is basically locally extinct in the toad's range."

In response, the government established an Island Ark program to introduce endangered species to isolated islands as last-stand refuges. Sixty-five quolls were introduced on two islands in 2003 and rapidly established a breeding population. Hopefully, quolls can be returned if the toads are ever brought under control. "Anecdotal evidence from Queensland indicates that in 30 to 50 years cane toads deplete their food sources and their population declines," Saalfeld says. "Hopefully, they'll reach a balance with native species."

For a premier view of the famous wetlands in Kakadu, we take a pontoon boat cruise on the Yellow Waters, a permanent wetland at the confluence of two rivers in the park. The cruise combines stunning landscape with sightings of 20-foot-long saltwater crocodiles, soaring kites and eagles, thousands of wading birds and waterfowl, and often glimpses of wild horses and water buffalos.

We cruise slowly down the narrow waterways past a flock of thousands of Plumed Whistling-Ducks mixed with Purple Swamphens, Magpie Geese, and Little Egrets. Pied Cormorants and Darters perch on low-hanging branches with wings outstretched in the sun. Technicolor Forest Kingfishers and Rainbow Bee-eaters dart across the bow of the boat, and flocks of Intermediate Egrets lift above the marsh grass like plumes of white smoke. In the distance, an adult Black-necked Stork with a juvenile stands statuesque on its nest in the crown of a towering tree. Once again I feel like I'm in a wildlife paradise, though one in danger of losing its innocence.

"The cane toads could change the face of Kakadu forever," our guide, Patricia Miller, reminds us.

Back at the Mary River Lodge, Mike Ostwald takes us on a cruise to see the wildlife in the riparian habitat along the Mary River. Two rare birds live along the banks, the Great-billed Heron and the Black Bittern. The banks also harbor both freshwater and saltwater crocodiles.

"The Mary River has more crocodiles than any river in the world," Ostwald says. "An aerial survey of 30 kilometers counted 400 salties on the banks. I counted 53 freshies and 8 salties along the 6 kilometers bordering our property."

No wonder all the creeks and billabongs in the park have danger signs posted. Even walking near the water's edge is dangerous because salties—or more properly, estuarine crocodiles—can spring at lightning speed out of the water for the length of their bodies.

During several hours of searching the riverbanks, we see the Great-billed Heron, a pair of flamboyant Azure Kingfishers, and dozens of other birds, yet not the Black Bittern. But Ostwald doesn't give up. His eagle eyes, tenacity, and knowledge of the bird's habits finally pay off with the quintessential bird-watching experience. On our way back to the dock, he spots the secretive bird perched at the water's edge in deep shadows. He maneuvers the boat expertly and we drift to within 10 yards of the rarely seen bird.

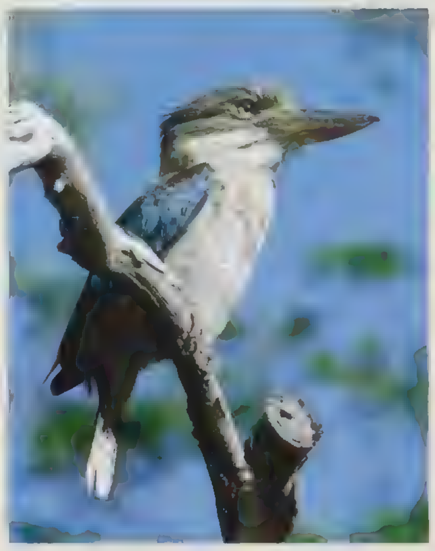
At sunset we return to a sandbar in the middle of the river for an authentic Aussie campfire dinner. When we land, a dozen freshwater crocs in the 10-foot-long range slide ominously into the water. A steel fence surrounds tables, chairs, and fire pit.

The sky fades through a rainbow palette of pastel hues as Ostwald heats up stew and damper bread—the Down Under version of skillet cornbread without the corn. A Barking Owl accompanies the wine and a billion stars brighten the dinner. Afterwards, Ostwald, who traces his lineage to an 18-year-old Irish convict who arrived in 1840, plays Aussie folk songs on his harmonica and recites Bush Verse, the Down Under version of America's cowboy poetry. "The Man from Snowy River" comes alive in the light of the campfire, to the chatter of distant dingos and ominous splashes in the dark river.

The Top End offers a rare opportunity to see nature in an intact ecosystem despite thousands of years of human occupation. With one of the richest and most diverse bird populations in the world, the Kakadu region is indeed a Garden of Eden, though one threatened by weeds and toads instead of the proverbial snake. ■

George Oxford Miller is a freelance writer and photographer based in Clarksboro, New Jersey.

The Blue-winged Kookaburra (below) is a large, forest-dwelling kingfisher with a characteristic laughing call. It is common in northern Australia and southern New Guinea.



FURTHER INFORMATION

Birding info: For bird lists, birding events, and speciality tours, contact the Mary River Park at <www.maryriverpark.com.au>; email: <general@maryriverpark.com.au>. For information on the wildlife and ecology of Kakadu National Park, see the RAMSAR database web site, <www.wetlands.org/RSDB/default.htm>.

Tourist info: For tourist information about Darwin and the Northern Territory, see <www.northern-territory.visitorsbureau.com.au> or <www.tourismtopend.com.au>. For good general information about Kakadu National Park, see <www.pacificislandtravel.com/australia/northern_territory/kakadu.asp>.

Field guides: Two popular guides for bird identification: *Field Guide to the Birds of Australia* by Simpson and Day (1999), which includes an extensive handbook valuable for those new to Australian bird families and habitats, and *The Field Guide to the Birds of Australia* by Pizzey and Knight (1997).

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THE AGE *of* BINOCULARS

BY KENNETH V. ROSENBERG

Are birding binos reaching the pinnacle of evolution?

It's been five years since we last published a comprehensive review of binoculars for birders, and in that time the number of models available in all price ranges has more than doubled. So it should not have surprised us when our request for sample products from the major optics manufacturers drew such a whopping response. Nearly 80 pairs of binoculars arrived at the Lab of Ornithology this past summer, with a combined value of well over $50,000 and a total weight of more than 100 pounds. This proliferation of binoculars, in every size, shape, and style, made us think of the so-called "Age of Dinosaurs," when these strange reptilian beasts occupied nearly every niche imaginable, only to face a mass extinction that reduced their diversity to only the hardiest forms. Only time will tell whether the current "Age of Binoculars," spurred on by the tremendous growth in birding and the willingness of more birders to splurge for quality optics, will crash like the dinosaurs in the face of over-diversification and stiff competition. For now, the flood of optics is both good news and bad news for a birder in the market for a new pair of bins.

The bad news is that the number of choices can be dizzying, and distinguishing between similar models is increasingly difficult. But the good news is that competition for your hard-earned dollars has resulted in higher and higher quality in binoculars, and many features that were rarely offered only five years ago have now become standard.

Among the encouraging trends we've noticed is that optics manufacturers are continuing to improve the quality of their glass and their lens coatings, creating products that provide unbelievable images. Today's mid-priced binoculars in many cases seem better than the top-of-the-line models of a decade ago. The vast majority of models we reviewed are lightweight, ergonomic roof-prism binoculars that—according to their manufacturers—are fully waterproof. Seventy-seven percent of the models we tested have a minimum close focus under 10 feet. And a majority of the models offer turn-and-lock eyecups and excellent eye relief, so that eyeglass wearers should never again have to settle for anything less than a perfect view.

The Five-Step Plan

Even with all the complexity and subtlety in the binocular market, choosing the right pair for you still involves a rather simple, straightforward process.

Step 1. Decide how much you can afford to spend. There's no point in lusting over optics you can't afford. On the other hand, remember that if you buy inexpensive binoculars that don't hold up, you may be purchasing another pair soon. An investment in quality binoculars today may last you a lifetime and will definitely enhance your enjoyment of birding.

Step 2. Decide whether you want 10x or 8x (or 7x) binoculars. People's preference in magnification is highly subjective and depends in part on the kind of birding you do. Many tour leaders and instructors recommend using lower magnification binoculars, because they usually have a wider field of view, which allows you to find birds faster and more easily, especially in dense forests. And, in direct comparisons, the 8x models often provide a noticeably brighter image than the corresponding 10x models—although, by a quirk of design, 10x binoculars usually weigh slightly less. But higher magnification can make a big difference in discerning the field marks of distant birds, especially when you're hawk watching, scanning flocks of shorebirds, or looking out over the ocean. My personal bias leans toward 10x binoculars for all kinds of birding. I've been using 10x and even 15x binoculars since I was a kid. I find that the greater magnification compensates for my poor eyesight, and I love seeing the fine detail on a close sparrow or warbler as much as making out the scapular pattern on a distant peep. Your budget could influence your choice. In general, it's more difficult to manufacture an inexpensive yet decent quality 10x, so if you're spending less than $500, you'll get higher quality for your money in the lower magnification models.

Step 3. Decide what other features are most important to you. To many birders, a wide field of view is essential for finding birds quickly. To others, depth of field or quickness of focusing might be more important. If you combine birding with stalking butterflies or dragonflies, a close focus distance (under 6 feet) is critical. If you bird while backpacking, weight and compactness might be your first considerations. Many of our reviewers favored the lighter, more ergonomic models, although some birders prefer a heavier, more "solid" feel. Two of my Sapsucker teammates from the World Series of Birding, for example, insist on carrying the heaviest (by far) binoculars in this review, because to them nothing surpasses their bright image. To me, the bottom line is always image quality—nothing can compensate for an image that is not sharp and clear. As you use the accompanying table in this review, you might find that binoculars with the features you care most about do not necessarily rate highest in terms of overall quality.

Step 4. If you wear eyeglasses (or share your bins with a spouse or child who does), pay special attention to the "eyeglass friendliness" column in our table. Our reviewers rated the degree of "tunnel vision" (due to poor eye relief) as well as the sturdiness and ease of use of the retracting eyecups. In general, turn-and-lock eyecups are far better than the older rubber eyecups (which tend to crack from frequent folding), but the long-term durability of the turning cups may be a problem too. Some manufacturers don't make much of an effort in this regard, but these days you should have little trouble finding a "friendly" pair of binoculars in almost any price range.

Step 5. After you've narrowed your search to a few likely candidates (good luck!), there's no substitute for testing binoculars with your own eyes and hands. One thing I've learned in conducting these reviews is that no two birders hold or look through binoculars exactly the same way. The size of your hands, the shape of your face, how far apart your eyes are, how you focus, all help shape your personal preference. If possible, find a store that will allow you to test many models side by side before laying down your money. This is especially important if, like me, you bird with eyeglasses.

Sifting Through the Pack

One advantage to conducting a binocular review at the Lab of Ornithology is the ready availability of volunteer testers among our staff and friends, who range in experience from beginners to ace members of our big-day team, the Sapsuckers. In the end, 40 reviewers donated their time and their strong opinions. Each participant compared at least 10 models, and each model was tested by at least 10 reviewers. Five of us die-hards looked at every single pair. Some features were easy to measure precisely, such as weight, close-focus distance, and field of view. I measured the width of the visible field at a relatively close distance (15 feet), rather than using the "feet at 1,000 yards" reported by most manufacturers. I reasoned that the time when the field of view is most critical is when a bird pops up at close range.

TIM GALLAGHER

Several die-hard binocular reviewers (including author Ken Rosenberg at the far left) do their final testing the morning after the first snowfall of autumn.

Other features—image brightness, depth of field, and ergonomics—are more difficult to measure and can vary greatly from person to person. Here's where I relied on the subjective opinions of the reviewers, asking them to rate three important aspects of each pair on a scale from 1 (poor) to 5 (excellent). First was overall image quality, taking into account brightness, sharpness, edge-to-edge clarity, and any color aberrations or other problems. Second was overall feel—ergonomic design, balance, ease of focusing, and other usability features. Finally, I asked each reviewer with eyeglasses to rate the "eyeglass friendliness" of each model, considering the degree of tunnel vision due to poor eye relief and the usefulness and durability of the retracting eyecups. In the accompanying table, we present the average of all reviewers' ratings for each model.

To derive an overall quality rating for each model, I converted the range of values for close focus and field of view into a similar 1 to 5 rating. For example, any model that focused to less than 7 feet scored a "5" (excellent), whereas models focusing only to 15 feet or more scored a "1" (poor). Next, I totaled all the scores for each model, counting the score for image quality twice because of its overriding importance. Among the 78 binoculars we tested, the overall quality rating ranged from 12.6 to 29.4 out of a possible 30. Finally, within each broad price category, I used the overall quality ratings to rank each model from best to worst. This all might sound complicated, but the results are pretty straightforward and represent the subjective preferences of a wide range of reviewers.

Budget Bins

For the first time, birders on a tight budget have some real choices for decent binoculars. In past reviews, testing the economy models gave us such eye strain, we kept a bottle of ibuprofen handy, but this time only a few of the cheapest compacts were truly awful to look through. Leading the economy group in overall quality was the Nikon 7x35 Action, a basic Porro prism model with an exceptionally wide field of view. Close behind was the Eagle Optics 7x32 Denali, a small, lightweight roof prism that certainly seems worth its very low price. Rounding out the top five economy models were the Audubon 8x42 Raptor, the two Bushnell Nature View models, and the Opticron 8x42 Imagic (all except the Raptor are a Porro-prism design). All of these models offer a very passable image, especially in the center of the field, and all work fairly well with eyeglasses. The Bushnell 10x42s offer the best choice for a truly inexpensive 10x binocular. The several compact models, along with the larger 8x42 Triumphs, are not recommended for birding and are especially useless if you wear glasses.

Affordable Quality

Perhaps the most pleasant surprise in this review was the high quality and usability found among binoculars in the $200 to $500 range. Top-rated among the 27 models in this category was the Leupold Wind River 6x32 Katmai, which has a bright clear image, compact and eyeglass-friendly design, wide field of view, and an exceptionally close focus. Although their low power will limit the usefulness of these binoculars for many types of birding, they are excellent for butterfly watching and would be great to keep by the window for close-up viewing of your backyard feeder birds. Unfortunately, the similar 8x32 model (at least the pair we tested) would not focus as crisply and had a flimsier overall feel. Close behind the tiny Leupolds was the Nikon Monarch 8x42, clearly the top-rated of any mid-priced, full-power birding binoculars. These lightweight, waterproof, and very comfortable binoculars focus down to 6 feet (they were given the name "Monarch" to attract butterfly watchers) and offer an image and feel that surpasses many models costing two or three times more. Only in a direct comparison with the top-priced binoculars could our reviewers discern the narrower, slightly duller image, which was not quite sharp at the edges. But with a street price well under $300, the Monarchs are a steal.

Several other 8x42 models present some nice choices in this very affordable price range. The Opticron BGA Imagic, Leupold Wind River Pinnacle, and Celestron Noble all offer an image comparable

Many of the tests took place indoors in the Lab's second-story lunch room, which overlooks Sapsucker Woods Pond.

KENNETH V. ROSENBERG (2)

A group of schoolchildren looked through the binoculars one afternoon and rated them from their unique perspective.

with the Monarchs, but their overall feel did not impress reviewers quite as much. The Eagle Optics Ranger PC, which ruled the mid-priced market for years, doesn't have quite as crisp an image and shows slightly greater distortion at the edge of the field. All of these models focus to about 6 feet or closer and work very well with eyeglasses. The Monarch 10x42 is the only 10x model among the top-10 rated mid-priced binoculars; these are also the most lightweight of any 10-power we tested. Comparable to the Monarchs in terms of image quality is Leupold's Wind River 10x50 Olympic, but a narrower field of view and a close-focus distance of only 10 feet contributed to their lower overall ranking. Other decent 10x binoculars in this price range are Celestron's Regal LS 10x42 and 10x50 and Noble 10x50 models (interestingly, the less expensive Nobles ranked higher, especially in terms of feel and eyeglass-friendliness), as well as the Eagle Optics 10x42 Ranger PC. Again, the Rangers are not quite up to the competition in terms of image quality, but they have a nice lightweight feel and offer a wide field of view and excellent close focus.

Finally, worth mentioning in the $200 to $500 price range are several compact binoculars that can put high-quality optics in your shirt pocket. Top-ranked among the compacts was the Nikon 8x20 Premier LX, a tiny waterproof roof prism binocular with a sharp image and excellent close focus. Our testers complained about their awkward feel, however, and especially about having to focus with the pinky or ring finger. By comparison, the Bushnell 7x26 Custom Compacts, with nearly comparable image and a much more user-friendly design, are still perhaps the best compact binoculars available for birding. Also in this mix are the miniature Zeiss 8x20 Victory and the slightly pricier Swarovski 8x20 B; both provide a sharp image but suffer from an awkward feel and focusing mechanism. Most reviewers felt that these miniature binoculars were too small for serious birding.

In the $500 to $1,000 category, we were hoping to see some exceptional quality at prices that a wide range of birders could still afford. In general, though, the 14 models in this group did not rate any higher than the top-ranked, less expensive models. Once again, Nikon led the field with the 8x32 HG DCF, which received an overall quality rating comparable with many top-of-the-line binoculars. Although they offer a wider field of view and slightly closer focus, these Nikons were not noticeably better than the inexpensive Monarchs in terms of image quality or overall feel. The only other model in this category worth mentioning is the Zeiss 8x30 B T* Conquest, which some reviewers felt offers the brightest, sharpest image of any binocular under $1,000. These are extremely lightweight and nitrogen-filled, but they do not focus particularly closely and don't have the solid, rugged feel of other roof prism binoculars. It's worth noting that Zeiss offers the Conquest in a 10x, 12x, and even a 15x45, and they all weigh less than 20 ounces each.

Neck and Neck at the Top

Frequently as our dedicated and discerning binocular-testers sorted through the morass of glass, a loud "WOW!" would rise above the din. This signaled that someone had picked up one of the top-of-the-line offerings from Leica, Swarovski, or Zeiss. The stiff competition between these manufacturers has resulted in a superb set of choice models that not only provide almost unbelievable optical quality but are simply a joy to hold and use. It's safe to say that no clear winner emerged at the top of this heap, and I urge would-be buyers of $1,000-plus binoculars to "test drive" your selections before taking out a second mortgage on the house or sending your kids to work in the mines. Each company boasts its own proprietary glass, coatings, and body designs, so these new models differ more from each other than do the "standard" roof prisms in the less expensive categories. All, however, offer the highest quality edge-to-edge image possible in a fully waterproof, nitrogen-purged, and eyeglass-friendly body, and they come with a lifetime warranty.

It's fair to say that Swarovski has set the pace for this burst of innovations by paying close attention to the

Category rank	Model	Power	Price	Quality index	Weight (ounces)	Close focus	Field of view	Close focus score	Field of view score	Image quality	Overall feel	Eyeglass friendliness
	ECONOMY (under $200)											
1	Nikon Action EX	7x35	$130	22.7	29.4	8'4"	33.0"	4	5	3.2	2.9	4.4
2	Audubon Raptor	8x42	190	21.3	29.0	11'7"	28.0"	3	5	3.3	2.9	3.8
2	Eagle Optics Denali	7x32	89	21.3	22.9	8'6"	24.5"	4	4	3.2	3.2	3.7
3	Bushnell Nature View	10x42	179	20.3	26.6	9'8"	21.0"	4	2	3.4	3.7	3.8
4	Bushnell Nature View	8x42	149	20.1	26.7	11'4"	22.0"	3	3	3.3	3.5	4.0
5	Opticron Imagic	8x42	189	19.3	24.3	12'3"	23.0"	2	3	3.5	3.3	4.0
6	Audubon Raptor	10x42	199	18.6	29.1	11'10"	24.0"	3	3	2.8	3.0	4.0
7	Tasco World Class	10x42	180	18.0	25.9	10'4"	20.0"	3	2	2.9	3.4	3.8
8	Audubon wp Intrepid	8x40	150	17.8	24.8	10'0"	22.5"	3	3	2.8	3.1	3.1
9	Audubon wp Intrepid	10x40	160	16.6	25.3	11'9"	20.0"	3	2	2.7	2.6	3.6
10	Tasco World Class	8x42	160	16.5	25.8	10'2"	22.0"	3	3	2.3	2.8	3.1
11	Eagle Optics Denali	9x32	99	16.2	22.0	9'0"	18.0"	4	1	2.4	3.1	3.3
12	Eagle Optics Triumph	8x25	70	15.0	9.9	5'9"	22.0"	5	2	1.9	2.2	2.0
13	Eagle Optics Triumph	10x25	80	14.9	11.4	8'2"	16.5"	4	1	2.4	2.3	2.8
14	Eagle Optics Triumph	8x42	89	14.0	22.4	15'10"	23.0"	1	3	2.4	2.2	3.0
15	Celestron Traveler	8x26	25	12.6	9.92	8'9"	19.0"	4	1	1.6	2.0	2.4
	MID-PRICE ($200–500)											
1	Leupold Wind River Katmai	6x32	370	27.7	19.5	4'4"	28.0"	5	5	4.5	4.4	4.3
2	Nikon Monarch	8x42	431	26.0	21.3	6'0"	22.5"	5	3	4.3	4.7	4.7
3	Opticron BGA Imagic	8x42	485	24.6	25.3	6'0"	22.5"	5	3	4.1	4.1	4.3
4	Leupold Wind River Pinnacle	8x42	495	24.3	24.3	5'0"	23.0"	5	3	3.8	3.9	4.8
5	Celestron Noble	8x42	269	24.1	22.7	6'1"	22.5	5	3	3.8	4.2	4.3
6	Nikon (compact)	8x20	500	23.3	9.7	6'0"	23.0"	5	3	4.0	3.0	4.3
7	Eagle Optics Ranger PC	8x42	379	23.2	23.0	4'5"	22.0"	5	3	3.6	4.0	4.0
8	Nikon Monarch	10x42	471	23.1	21.1	6'0"	20.0"	5	2	3.8	4.5	4.0
9	Celestron Noble	8x32	249	23.0	20.0	3'6"	26.0"	5	4	3.2	3.8	3.8
10	Leupold Wind River Katmai	8x32	390	22.9	24.3	3'10"	23.5"	5	3	3.6	3.8	3.9
11	Zeiss B T* Victory	8x20	429	22.8	8.0	6'11"	24.5"	5	4	3.6	3.1	3.5
12	Leupold Wind River Olympic	8x42	385	22.7	22.9	6'0"	22.5"	5	3	3.5	3.9	3.8
13	Bushnell Custom Compact	7x26	380	22.5	13.0	8'3"	24.0"	4	3	3.8	4.0	3.9
14	Celestron Regal LS	10x42	389	22.2	25.9	5'9"	21.0"	5	2	3.7	4.2	3.6
15	Brunton Eterna	8x32	399	22.0	26.1	3'10"	26.0"	5	4	3.3	3.1	3.3
16	Eagle Optics Ranger PC	10x42	399	21.8	22.7	4'6"	22.0"	5	2	3.4	4.0	4.0
17	Bushnell Legend	8x42	418	21.7	29.8	6'0"	23.0"	5	3	3.6	3.1	3.4
18	Audubon Equinox	8x42	240	21.6	23.6	3'9"	23.0"	5	3	3.1	3.4	4.0
19	Audubon Equinox	10x42	260	21.4	23.4	4'0"	22.0"	5	3	3.0	3.4	4.0
20	Celestron Noble	10x50	289	20.4	26.9	8'10"	18.0"	4	1	3.6	3.9	4.3
21	Bushnell Legend	10x42	438	20.3	29.1	6'0"	21.0	5	2	3.3	3.3	3.4
22	Leupold Wind River Olympic	10x50	450	19.6	25.8	10'	18.5"	3	1	3.9	4.0	3.8
23	Celestron Regal LS	10x50	424	19.0	29.8	9'11"	19.0"	4	1	3.6	3.4	3.4
24	Bushnell Legend	12x50	460	18.9	33.3	9'6"	17.5"	4	1	3.3	3.6	3.7

Chart continues on the following pages.

Category rank

Based on quality index scores for price-range category

Price

Manufacturer's suggested retail price

Quality index

Sum of scores for image quality (times two), overall feel, eyeglass friendliness, close focus, and field of view. Possible range from 6.0 to 30.0

Field of view

Measured at a distance of 15 feet

Close focus score

1 = more than 15 feet
2 = 12–15 feet
3 = 10–12 feet
4 = 7–10 feet
5 = less than 7 feet

Field of view score

1 = less than 20 inches
2 = 20–22 inches
3 = 22.5–24 inches
4 = 24.5–27 inches
5 = more than 27 inches

Image quality, overall feel, eyeglass friendliness

Average of 10 or more reviewers' ratings, from 1 (poor) to 5 (excellent)

Category rank	Model	Power	Price	Quality index	Weight (ounces)	Close focus	Field of view	Close focus score	Field of view score	Image quality	Overall feel	Eyeglass friendliness
	MID-PRICE ($200–500, continued)											
25	Fujinon BFL	8x42	$235	18.8	25.4	12'10"	24.5"	2	4	3.1	3.1	3.5
26	Steiner Merlin	8x32	399	18.1	21.9	8'6"	22.5"	4	3	2.9	3.0	2.3
27	Fujinon BFL	10x42	240	16.5	25.9	11'6"	25.0"	3	4	2.4	2.7	2.0
	TOP AFFORDABLE ($500–1,000)											
1	Nikon HG DCF	8x32	700	27.0	26.2	5'6"	27.0"	5	5	4.3	4.0	4.4
2	Minox BD ALT BR	10x42	799	24.8	29.1	6'0"	22.0"	5	3	4.1	4.2	4.4
3	Opticron Oasis WP	8x42	849	24.6	25.4	5'11"	24.5"	5	4	3.8	4.0	4.0
4	Pentax DCF SP	8x43	698	24.0	25.3	4'8"	23.0"	5	3	3.7	3.9	4.7
5	Minox BD ALT BR	8.5x42	759	23.7	28.5	6'0"	21.5"	5	2	4.1	4.0	4.5
6	Zeiss B T Conquest	8x30	550	23.6	19.5	9'7"	24.0"	4	3	4.4	3.7	4.1
7	Pentax DCF XP	8x33	558	23.0	18.6	3'9"	23.0"	5	3	3.4	3.9	4.3
8	Fujinon CD	8x42	760	22.8	32.5	9'8"	26.0"	4	4	3.7	3.4	4.0
9	Swift Audubon (RP)	8.5x44	629	22.6	25.6	9'10"	22.0"	4	3	3.8	4.0	4.0
10	Fujinon CD	10x42	790	22.0	32.8	9'6"	23.0"	4	3	4.0	3.5	3.5
11	Steiner Peregrine	8x42	899	21.3	26.2	5'2"	23.0"	5	3	3.7	3.7	2.2
12	Brunton Compact Epoch	8x21	629	20.8	14.2	5'6"	26.0"	5	4	2.7	2.7	3.7
13	Swarovski B	8x20	599	20.7	7.7	7'0"	24.0"	4	3	3.9	2.7	3.2
14	Optolyth Alpin NG	10x50	611	13.5	29.0	26'0"	n/a	1	3	2.4	2.3	2.4
	TOP GUN (over $1,000)											
1	Zeiss FL T*	8x42	1500	29.4	27.3	6'2"	27.0"	5	5	5.0	4.4	5.0
2	Swarovski EL WB	8x32	1666	28.9	23.7	6'0"	27.0"	5	5	4.7	4.7	4.8
3	Leica Ultravid BR	7x42	1500	28.6	28.5	9'11"	28.0"	4	5	5	4.6	5.0
4	Leica Trinovid BN	8x32	1200	28.3	23.4	6'0"	27.0"	5	5	4.7	4.1	4.8
5	Swarovski EL	8.5x42	1821	27.9	30.9	7'6"	26.0"	4	4	5.0	4.9	5.0
6	Leica Ultravid BR	8x42	1550	27.5	28.8	9'3"	26.5"	4	4	5.0	4.5	5.0
7	Zeiss Victory FL T*	10x42	1550	27.4	27.8	5'4	22.5"	5	3	5.0	4.5	4.9
8	Leica Ultravid BL	8x42	1600	27.1	26.7	9'2"	26.0"	4	4	5.0	4.1	5.0
9	Swarovski EL WB	10x42	1888	26.2	29.0	7'5"	22.0"	4	3	4.9	4.8	4.6
9	Leica Ultravid BR	10x42	1600	26.2	28.5	8'10"	22.5"	4	3	4.9	4.5	4.9
10	Swarovski EL WB	10x32	1755	26.1	23.2	5'10"	24.0"	5	3	4.6	4.6	4.3
11	Leica Trinovid BN	8x42	1300	26.0	33.8	9'1"	24.0"	4	4	4.7	3.8	4.8
12	Swarovski SLC B	7x42	1254	25.6	36.0	12'0"	27.0"	3	5	4.8	3.4	4.6
13	Nikon Premier LX	8x42	1200	24.8	28.3	8'6"	24.0"	4	3	4.7	3.6	4.8
14	Leica Trinovid BN	10x42	1350	24.7	33.1	8'7"	22.5"	4	3	4.8	3.4	4.7
14	Brunton Epoch X8S	8.5x43	1449	24.7	28.6	2'7"	21.0"	5	2	4.3	4.3	4.8
15	Swarovski SLC WB	8x30	1066	23.1	23.5	13'0"	25.5"	2	4	4.6	3.5	4.4
16	Brunton Epoch X10S	10.5x43	1499	22.7	29.3	2'6"	19.5"	5	1	3.9	4.3	4.6
17	Swarovski SLC WB	10x50	1643	22.1	44.8	15'0"	22.0"	1	3	4.9	3.4	4.9
18	Swarovski SLC WB	10x42	1310	20.9	33.8	12'8"	20.5"	2	2	4.5	3.6	4.3
19	Optolyth BGA	8x56	1031	16.0	36.8	12'9"	22.0"	2	3	3.1	2.2	2.6

Category rank

Based on quality index scores for price-range category

Price

Manufacturer's suggested retail price

Quality index

Sum of scores for image quality (times two), overall feel, eyeglass friendliness, close focus, and field of view. Possible range from 6.0 to 30.0

Field of view

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Field of view score

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4 = 24.5–27 inches
5 = more than 27 inches

Image quality, overall feel, eyeglass friendliness

Average of 10 or more reviewers' ratings, from 1 (poor) to 5 (excellent) needs and criticisms of serious birders. Swarovski's EL series was the first to sport a combination of lightweight magnesium-alloy body, wonderfully ergonomic features, twist-and-lock eyecups, and the highest-quality optics. Zeiss and Leica have now followed with their own versions, offering a lightweight, ergonomic design and a superb image, bucking their previous trends towards heavier and bulkier binoculars. Although your choice will undoubtedly come down to personal preference (or brand loyalty), a close look at the ratings in our table will reveal some subtle differences that might tip the balance toward one model or another.

In terms of pure image quality, six models received "perfect scores" from our reviewers, indicating an absolutely flawless, bright, and crisp-from-edge-to-edge image. Of these, the Zeiss 8x42 FL T* scored the highest for overall quality of any binocular tested, combining its exquisite image with perfect eye relief, a relatively wide field of view, and excellent close focus. The similar Zeiss 10x42 was the only 10x model in our test to receive this highest image rating. Some reviewers were critical of the ergonomics of these Zeiss models, however, labeling them as "forward-heavy," "not comfortable," "too knobby," and even "flimsy." Rounding out the "perfect-image" club were Leica's 7x42 and 8x42 Ultravids and Swarovski's 8.5x42 EL. These ELs received the highest scores of any binocular for all three subjective categories, with especially high marks for overall feel. Typical comments were "very ergonomic," "nice feel," "well balanced," and "wow!" (Personally, I'd like to have a pair of these surgically implanted in my palms.) The Ultravids represent a leaner, meaner version of the rather bulky Leica Trinovids, with an even brighter, crisper image in direct comparison. Although the new Leicas won instant fans among our testers, others were less than enamored with their overall feel, and these Leicas don't focus as closely as the other top models.

Both the Leica Ultravid and Swarovski EL 10x42 models ranked only slightly behind their 8x42 counterparts, primarily due to a slightly less bright (but still superb) image and a correspondingly narrower field of view. Again the ELs won out in terms of ergonomics, but they unfortunately do not offer quite enough eye relief to avoid slight tunnel vision with eyeglasses. The new Swarovski 8x32 and 10x32 EL models represent an even further innovation in lightweight, ergonomic design. The slight loss in image brightness is compensated for by a wider field of view and an even closer focusing distance than the larger ELs—in fact, the 10x32s offer the widest field of any 10x roof prism binocular we've seen. In addition, I found the small ELs to be especially easy and fast to use with one hand, for example, when I was carrying a scope. Unfortunately, I don't get a full field of view from the 10x32s with my eyeglasses on.

Leica did not send us their brand new 8x32 or 10x32 mid-sized models, which are even more lightweight than the ELs and undoubtedly will give Swarovski another run for their money. The older Trinovid 8x32s—which led the mid-sized category in our last review—still ranked fourth in terms of overall quality. Finally, worth mentioning because of its exquisite image is Swarovski's honking big 10x50 SLC—still probably the brightest 10x on the market. At least a few top birders I know insist on carrying these, in spite of their excessive weight, relatively narrow field of view, and poor close focus. I'd love to see these in an EL version.

Three additional manufacturers have vied for a share of the top-of-the-line binocular market, and two of these should be commended for their efforts. Nikon, which now leads in all of our less-expensive categories, sent us a prototype of their brand new 8x42 Premier LX, a reworked, more lightweight version of their acclaimed Venturer. Although the image offered by these new Nikons is excellent, it didn't quite match the top-ranked models (one reviewer noted slight color-fringing), and some reviewers did not care for their heavier and bulkier feel (ironic, because the Nikon Venturer set the standard for usability five years ago). But a lower suggested retail price than most other top models may make these binoculars quite attractive. The newest player in the fine optics game is Brunton, which offers the 8.5x43 and 10x43 Epoch XS models. These have some nice features, such as eyecups that lock in multiple positions and unheard of close-focusing distances (though at these distances you need to use one eye), and they are very cool looking. But our reviewers were disappointed by their optical quality, and several of them cited visible color fringing and the relatively narrow field of view on both models.

Ken's Parting Thoughts

So, if your birding has evolved to new levels, but this new age of binoculars is passing you by, I offer the following thoughts and personal recommendations. First, if you think your old binoculars are still just fine, you may want to think again. The improvements in image quality and usability really do make a difference, both in your ability to identify birds and in your enjoyment of birding. Look through a new pair and see for yourself. Second, if you're in the market for new optics, I recommend spending as much money as you can afford. Even beginners and kids will benefit from higher quality binoculars, and the investment in durability or a lifetime warranty might save you money in the long run. Finally, if you buy some new binoculars, I ask you to consider the fate of your old optics. As birding and bird-conservation efforts flourish worldwide, ornithologists and birding guides throughout Latin America and the Caribbean often lack the means to purchase the basic tools of their trade. Fortunately, at least two programs have been set up to deliver donated used binoculars to these very deserving and grateful people, and I urge you to support these efforts. For more information, check out the American Birding Association's Birders' Exchange at <www.americanbirding.org/bex> and Optics for the Tropics at <www.opticsforthetropics.org>. ■

Kenneth V. Rosenberg is director of the Conservation Science program at the Lab of Ornithology and co-captain of the Sapsuckers, the Lab's World Series of Birding team.

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WAXWING LYRICAL

by Jack Connor

Flying with Icarus and Daedalus

Cedar Waxwings first became a presence in my life 30 years ago in Gainesville, Florida, when my wife brought two of them home from a bird rehabilitator who was searching for people who would take "unreleasable" birds. They had been part of a flock hit by a car, and each had lost a wing to amputation. Jesse named them Daedalus and Icarus, but I couldn't remember which was which. Whenever I'd finally memorized that it was Icarus who was missing the right wing and Daedalus the left, she'd tell me I had it wrong again, and it was the other way round.

In Florida we kept them outdoors in a cage three feet high, with sticks and plastic toys braced through the wires for climbing. They ate ravenously, or waxwingously, you might say—whistling plaintively while Jesse served them raisins, grapes, currants, or diced apples each morning and afternoon and gobbling down the fruit as if they hadn't been fed for days. Audubon once claimed that waxwings "gorge themselves to such excess as sometimes to be unable to fly and suffer themselves to be taken by hand. Indeed, I have seen some which, although wounded and confined to a cage, have eaten of apples until suffocation deprived them of life."

Our captives apparently restrained themselves. Icarus, or maybe it was Daedalus, lived with us for four years, and his companion for seven. We took them with us on three moves, the longest an 1,100-mile journey to New Jersey—their cage the last household item we jammed into the backseat.

In New Jersey we kept them on our screened porch March through October and then in the kitchen through winter. Non-birding visitors often told us they were prettier than parakeets or lovebirds and asked where they might buy a pair themselves. One friend refused to believe they were native birds, until I took out our Golden Guide and showed him the picture. "Are they rare?" he asked. "Not really," I said. "You could probably see them in your yard." He arched an eyebrow, "A bird like that, I think I'd notice."

When robin flocks flew over the house or into our trees, Icarus and Daedalus hopped about from perch to perch, tilting their heads to scan their old flying partners. When flocks of waxwings appeared, they jumped and trembled with excitement, whistling so fiercely it sounded like a shriek. And the wild birds seemed to answer back. Once, a flock landed in the shrubs 10 feet from the porch, and several free-flying waxwings gave our sad prisoners long, studying looks.

Icarus's and Daedalus's calls imprinted so well that for years later Cedar Waxwing was the one species I could detect as fast as the best ear birders. On Christmas counts someone else in our group was always the first to hear the woof of a Great Horned Owl off in the pre-dawn woods or the squeaks of kinglets foraging in the pines at midmorning, but in late afternoon, when that end-of-Christmas-count/end-of-another-year blahs had settled in, I liked to call out, "Waxwings!" three seconds before anyone else, then lean back with pride as two or three dozen of my birds flew into sight.

Is there a kinder, gentler bird anywhere? Or, one doing more good for the world? An old farmstead stands just inside the entrance of the college where I teach. When the state acquired the land for the campus 40 years ago, that corner was 20-plus acres of treeless dirt. Today, cherry trees and red cedars are marching relentlessly across the fields, shading the ground for teaberry, milkweeds, violets, bracken ferns, and mushrooms growing below. Nuthatches, creepers, chickadees, woodpeckers, flying squirrels, butterflies, and bees now forage there. "Waxwings and robins have built these woods," I like to tell my students.

Waxwings are frugivores, of course, relying on fruit for more weeks of the year than any other birds in the temperate zone and for more than 80 percent of their diet. And trees, especially pioneer plants such as cherries, hawthorns, crab apples, and red cedars depend on waxwings, robins, and a handful of other fruit-eating species to distribute their seeds.

Waxwings vary the diet only in late spring and early summer, when berry stocks are at their annual low and nesting time is near. One June morning not long ago, I stepped onto our back deck with a cup of coffee and found about half a dozen waxwings that seemed to be plucking the white blossoms of the locusts high overhead. I had to go back for my bins before I believed it, though I learned later from several sources that it's a regular habit. In his *Life Histories,* A. C. Bent quotes William Brewster's 1937 report of a 15-minute observation: "During this time each bird must have eaten a dozen or more petals . . . sometimes swallowed whole . . . sometimes torn into halves. . . . I was convinced that they were eating only the petals and not selecting those that may have had insects in them."

Waxwings do chase insects during those brief weeks in June and early July; they often forage over water chasing damselflies and other aquatic invertebrates, moving awkwardly to my eye, like under-equipped kingbirds. As soon as they can, they go back to fruit and follow each developing harvest through the seasons,—blueberry, huckleberry, inkberry, juniper, holly—for the next 10 or 11 months. That Cedar Waxwings can live on fruit so long so far north of the tropics would be a most remarkable story, if it were not for their even more northerly sister species.

A Cedar Waxwing perches in a crab apple tree, above. Many pioneering trees, such as cherries, hawthorns, crab apples, and red cedars, depend on waxwings and other fruit-eating birds to distribute their seeds.

MARIE READ

A. C. Bent describes the Bohemian Waxwing as "a well-dressed gentleman in feathers, a Beau Brummel among birds." They are also "birds of mystery [because] we never know where or when we may see these roving bands of gypsies." They are a circumpolar species, ranging north and northwest on the North American continent as far as fruit-bearing plants grow. They wander throughout the boreal forests of western Canada and interior Alaska in pursuit of fruit.

Bohemians are among the rarer of the irruptive vagrants in most northeastern states, coming south in numbers just often enough to keep themselves on every discerning birder's "most wanted list."

They irrupted our way last winter, the largest flight to invade the mid-Atlantic states in at least half a century. Several were seen at Island Beach State Park on the Jersey Shore, only an hour away, and Jesse and I spent three weekend mornings there in unsuccessful searches, twice encountering groups of happy birders who could offer only that salt-in-wound solace, "You should have been here 20 minutes ago."

The next weekend, we drove farther north to Sandy Hook and our luck changed. We parked our car exactly where the rare bird alert advised, walked down the path 100 yards, and came upon a celebrating pack of birders with scopes raised. "Do you have them?" I asked. "Take a look," one man said, stepping back and waving us to his scope. Jesse looked first, and I looked second, getting perhaps a 15-second peek at two Bohemians perched together with a Cedar Waxwing above them. All three birds were lovely in their silky plumage, but the Bohemians showed that elegant, chestnut undertail. As I stepped away to raise my own scope, a sharpie flew into sight and hundreds of birds—robins, yellow-rumps, and Cedar and Bohemian waxwings—went off in a rush. "There they go!" someone shouted.

We chased them down the trail without success, and Jesse and I walked the paths at the Hook the rest of the day, but we did not see them again. That one glance was it. And, given the decades that generally pass between southward irruptions, and the chances of me taking a birding trip to the Alaskan interior anytime soon, those 15 seconds may be it—all I ever have to say firsthand about Bohemian Waxwings. I am not complaining, though—not by a long shot.

I can't hear Cedar Waxwings anymore—unless they are flying very low, the forest is dead still, and the wind is just right. Nowadays, my students point them out to me first, then give me a pitiful look. "You can't hear that?" they like to ask.

But I am not complaining about that, either, or at least I'm trying not to complain. When Daedalus, or maybe it was Icarus, finally gave up the ghost to aging, and we buried him in the yard after his seven years of sharing our porch with us, I took solace that we still had waxwings in our yard and the woods nearby. We have them still, of course. That is what matters in the long run. ■

Institute for Field Ornithology

WORKSHOPS FOR BIRDERS 2005

Pacific Northwest Seabirds
February 2005
Location: Coastal Washington state

Tropical Bird Ecology
March 2005
Location: Canopy Tower, Panama

Waterfowl Ecology
April 2005
Location: Choteau, Montana

Raptors of the Rio Grande Valley
April 2005
Location: McAllen, Texas

Owls of Montana
May 2005
Location: Charlo, Montana

Field Sketching and Bird Illustration
May 2005
Location: Franklin, North Carolina

Ornithology for Birders
May 2005
Location: Montreal, Canada

Birding by Ear
June 2005
Location: White Mountains, New Hampshire

Colorado: Tundra to Prairie
June 2005
Location: Boulder, Colorado

Sparrows
June 2005
Location: Minot, North Dakota

Caribbean Seabirds
June 2005
Location: San Salvador, Bahamas

Arctic Breeding Bird Ecology
June 2005
Location: Nome, Alaska

Flycatchers
July/August 2005
Location: Sierra Vista, Arizona

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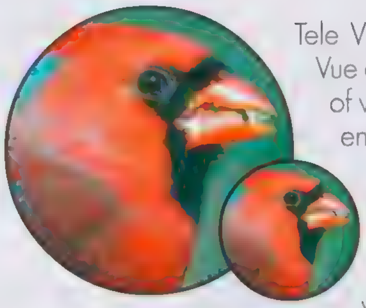

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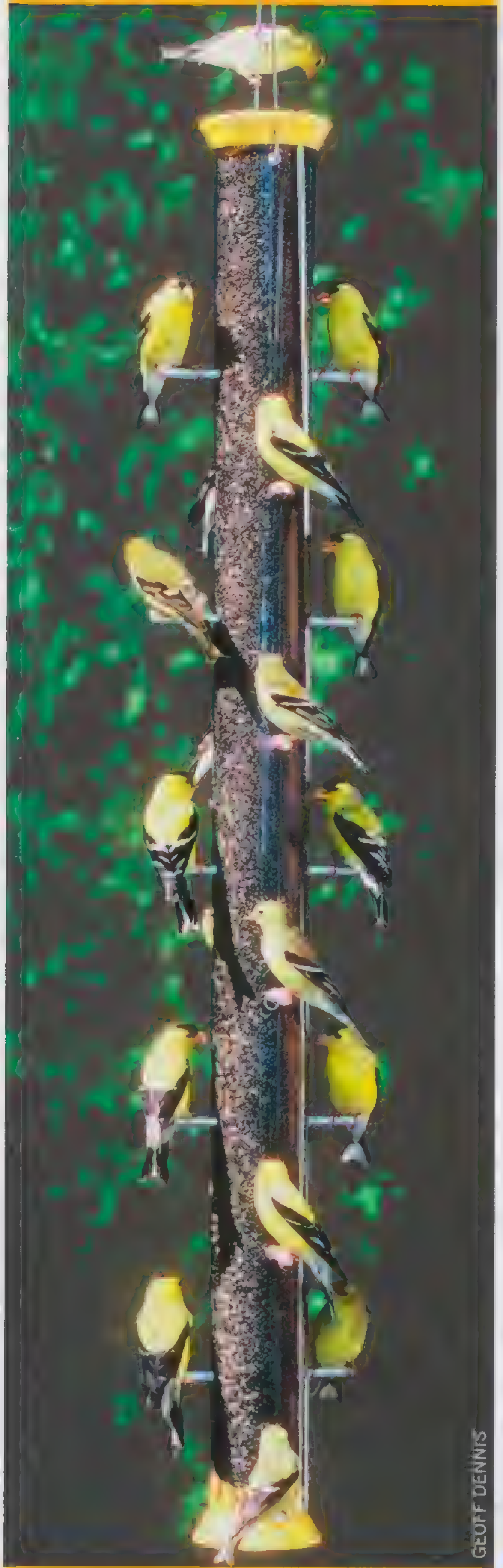

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THE BENEFITS OF BEING A BIRDER

by Pete Dunne

1. You never have to spend money on clothes. Probably nothing you own is so tasteless or threadbare that it would not constitute acceptable birding attire.

2. When you visit your in-laws whose television is fused to the Golf Channel, you can sit with your father-in-law and feign interest in the game while amusing yourself by keeping a mental list of all the birds heard in the background.

3. If the *New York Times* crossword puzzle asks for a seven-letter word beginning with T that is the name for the innermost flight feathers of a bird's wing, you'll know the answer.

4. When you get stuck in a rush-hour traffic jam and need to know which lane is blocked, you can reach under your seat for your binoculars and determine which lane you should be in way ahead of the competition.

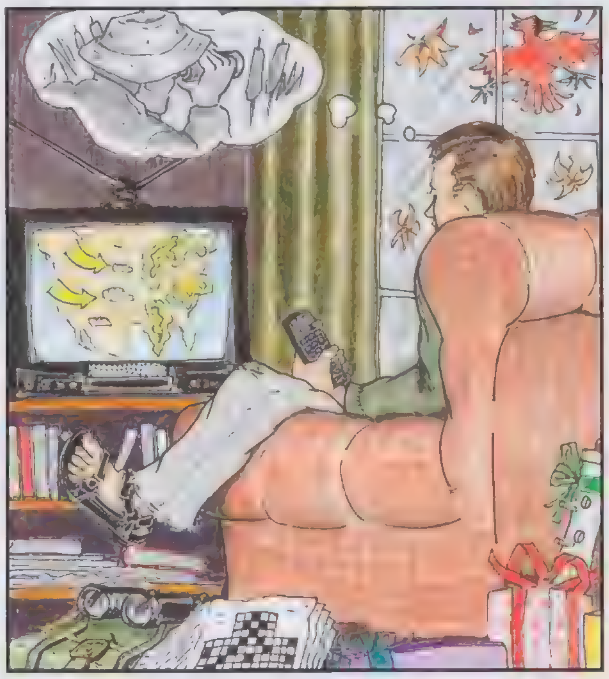
5. You get to visit Arizona in July (after all the snowbirds have left), when hotels and RV parks are offering discounts.

6. You'll never have to decide between two favorite old movies on late-night television.

7. When you retire, your colleagues will know that what you really want is new binoculars, not a watch.

8. You never have to buy gifts for anyone for the holidays. All you have to do is save all the bird-related junk you get one season and give it away the next. (Hint: when you put the gifts in the closet, leave the wrapping on the gifts and don't remove the name of the giver so you don't commit the social boo-boo of sending it back to the person who gave it to you.)

9. You know why the cardinal (or robin or mockingbird) is throwing itself against your window, so you don't have to call a nature center to solve the mystery.



10. You know the names of all the meteorologists on the Weather Channel and can amaze your nonbirding friends (if you have any) with the scope of your intimacy.

11. If you go to a garage sale and find a 1934 Peterson field guide, you won't balk at the 50-cent price tag.

12. You have the perfect excuse to say no when your neighbor's cat has kittens and you are invited to take first choice.

13. When you're at a football game and an attractive fan sits beside you with a new pair of binoculars, you can break the ice by showing the person how to use the eyepiece adjustment to calibrate the instrument for his or her eyes.

14. The prospect of a category-three hurricane striking just west of your coastal town is cause for anticipation instead of anxiety.

15. When your great aunt dies and you have to choose between the Wedgwood or a sketch by some guy name Fuertes, you will make the right choice.

16. When it's 10:00 A.M. and you are westbound on I-10 just outside Baton Rouge, Louisiana, you'll know not to stop just anywhere for lunch, because you're within range of a bowl of chicken and sausage gumbo at Al T's in Winnie, Texas.

17. When your nonbirding spouse suggests taking a vacation in Cancun, you can go online and get reservations for (and nonrefundable airline tickets to) Chan Chich, explaining later that you must have been confused.

18. When a cold front hits in late October, you'll be at a hawk watch, blissfully unmindful of all the leaves in the yard that the northwest wind is relocating to your neighbor's yard.

19. A season ticket to all the national wildlife refuges in the United States (a.k.a. Duck Stamp) is only a fraction of the cost of a season ticket for football.

20. You never have to worry about losing a ball. You never have to cut bait (unless you go pelagic birding). And the only person ever keeping score is you. ■

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LIVING BIRD

SPRING 2005 VOLUME 24 NUMBER 2

GREETINGS FROM SAPSUCKER WOODS

We might as well call this the special Marie Read commemorative issue of *Living Bird.* Her photographs appear not only on the front and back covers and here on the table of contents page but also throughout our lead feature, "Dedicated Followers" (page 14), written by her husband, Peter Wrege.

This article examines the feeding strategies of a number of Central American birds that specialize in following invading hordes of army ants and catching the fleeing insects and other prey. To take the remarkable pictures for this article, she knelt on the ground ahead of the ants, frantically snapping away with her camera as the ants swarmed over everything in their path—including Marie.

People who know Marie won't be surprised to read this. They know how determined she can be and how willing to face hardship and discomfort in pursuit of excellent photographs. Although she is probably known far more for her stunning portraits of North American songbirds—such as those on the front and back covers of this issue—she has spent months in the African bush, photographing White-fronted Bee-eaters, Secretary-birds, and other exotic (to us) species, and she has made many trips to Latin America.

I first met Marie in 1990, soon after I became editor of *Living Bird,* and her remarkable photograph of a Black-capped Chickadee hovering in the air, taking a drink from a dripping icicle, graced the back cover of the first issue I produced. Since then she's had 10 additional *Living Bird* covers, and it's a rare issue that doesn't contain at least one of her pictures.

Tim Gallagher
Editor-in-Chief

Cover: A male Scarlet Tanager sings on his territory on a bright spring day in upstate New York, filling the woods with his distinctive song. Photograph by Marie Read.

Right: A Bicolored Antbird follows a horde of army ants, foraging on the insects that are fleeing from the ants. See "Dedicated Followers" on page 14. Photograph by Marie Read.

Back cover: A male Baltimore Oriole brings food to its young. This pendulous nest structure is typical of the species. Photograph by Marie Read.

14 DEDICATED FOLLOWERS *by Peter Wrege*
Birds gather to feed on the swarms of insects fleeing invading army ants.

26 WELCOME WANDERERS *by Paul Zimmerman*
Flame-colored Tanager sightings are increasing in Arizona.

32 INVADERS FROM THE NORTH *by Gerrit Vyn*
This winter, Great Gray Owls, Northern Hawk Owls, and Boreal Owls came south in unprecedented numbers.

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SPRING 2005 VOLUME 24 NUMBER 2

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Letters

OPTICAL OMISSIONS

Even though about 75 percent of the binoculars in your latest review ("The Age of Binoculars," Winter 2005) were out of my price range, I still found the article interesting and informative. I have to gripe a little though. None of the Canon IS (Image Stabilized) binoculars were included or even mentioned. A couple of years ago I picked up a pair of Canon 8x25 IS binoculars, and I think they're a fantastic low-to-mid-priced solution. The ergonomics are good, but not great, the field of view 21", the optics bright, and the eyeglass friendliness (which is important to me) is very good with fold-down eyecups. But, most importantly, the stabilization feature is great. When I was shopping I tried reading the headlines of a newspaper in a dispenser down the street. It was easier with the 8x IS binocs than with any of the comparably priced 8x or 10x offerings. The stabilization seems like it adds an additional 2x-4x in magnification. In the field I find that I'm able to pick out fine details like eyerings much better and faster than my cohorts of comparable ability. The stabilization is especially nice when looking straight up, watching something from a moving car or train, or tracking a bird in flight, and I find that my eyes don't get tired nearly as fast when I use these compared with regular binoculars. I've also found that when I spot other birders using them and ask what they think about them their impressions are the same as mine. Older birders seem to like them for the reduction of hand-shake. I confess, I've never used a pair of $1,000+ binoculars, so I can't say how these compare, but I think that leaving IS binoculars out of your review was a significant error.

John Tomaszewski
Staten Island, New York

"The Age of Binoculars" omitted a key criterion: durability (or the ability to take a beating). I am among those who unfortunately give their optics a good knock every so often, and different binocular models can vary greatly in how they tolerate it. I imagine you can't be abusing your sample binoculars to evaluate this, but some general comments would be helpful.

Bob Honig
Houston, Texas

BARROW BOUND

Just a note to compliment you on your fine magazine and to express my appreciation for the article "Birding in Barrow" (Autumn 2004) by Gary Kramer. As a direct result of the article, a friend and I are traveling to Barrow in June this year, following leads furnished by Gary. In arranging the trip, I had the opportunity to make the contacts suggested, and there were no errors! I also contacted Gary through the web site provided in the article, and he was most helpful in answering questions about the final details. I hope to see more articles by him in the future.

Now, capturing images like his is up to me. I am an amateur birder-photographer going on 76 years old, but my friend is just a kid of 62. I doubt that I'll be able to tramp as many miles as Gary, but I sure expect to enjoy it as much.

Thank you, and I am looking forward to reading more informative articles from Sapsucker Woods.

Bob Griffith
Veradale, Washington

We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

IN MEMORIAM

Ernst Mayr

(1904–2005)

The world of science lost a giant on February 3, 2005, when famed evolutionary biologist and ornithologist Ernst Mayr passed away at the age of 100. Widely regarded as one of the greatest evolutionary biologists in history, Mayr began his career in 1925 intending to become a medical doctor, following in the footsteps of a number of his forebears. But his interest in birds and biology was so overpowering that he enrolled at the University of Berlin and completed a Ph.D. in zoology in just 16 months.

While attending the International Zoological Congress in Budapest, Hungary, in 1927, Mayr met Lord Rothschild, a wealthy English aristocrat who owned one of the world's premier collections of bird specimens. Rothschild offered to send Mayr to New Guinea to study the birds-of-paradise.

Mayr spent the next two-and-a-half years traveling in New Guinea and the Solomon Islands. There he saw how isolated populations of particular species had accumulated genetic differences over the centuries and millennia, finally diverging and forming new species. It was a transformative period in his life, much like Charles Darwin's nineteenth-century voyage to the Galápagos Islands.

In many ways, Mayr went beyond Darwin, developing new theories to explain how evolution leads to species diversity. Darwin, after all, described only how single populations change through time via natural selection. In his seminal 1942 book, *Systematics and the Origin of Species*, Mayr described the mechanism by which evolution ultimately leads to adaptive radiations, species communities, and ecosystems. New species emerge when geographically isolated populations diverge from one another structurally, behaviorally, and genetically to such an extent that the descendant populations no longer breed with one another.

In this 2001 photograph, professor emeritus Ernst Mayr sits in his office at Harvard University's Museum of Comparative Zoology.

KRIS SNIBBE/COURTESY HARVARD UNIVERSITY NEWS OFFICE

Like Darwin, Mayr was a brilliant naturalist. In the course of his research, he described 26 species of birds and 38 species of orchids that were new to science.

Ernst Mayr emigrated to America in 1932 when Lord Rothschild's bird collection was acquired by the American Museum of Natural History in New York. He served as a curator at the museum for the next 21 years. During that time, he helped form the Society for the Study of Evolution and was the first editor of its journal, *Evolution*.

Mayr became the Alexander Agassiz Professor of Zoology at Harvard University in 1953 and remained there until his retirement in 1975. He also served as director of Harvard's Museum of Comparative Zoology from 1961 to 1970. A prolific author, Mayr published more than 20 books and 700 articles during the course of his lengthy career. He won numerous awards, including the prestigious Balzan Prize in 1983, the International Prize for Biology in 1994, and the Crafoord Prize in 1999. He donated thousands of dollars in prize money from these awards to The Nature Conservancy and to Harvard University's Museum of Comparative Zoology. Mayr also received the National Medal of Science in 1970. And in 1995, Harvard named the library at the Museum of Comparative Zoology after him.

Mayr was once asked the secret of his longevity, to which he replied: "I have worked hard all my life, and I think that's part of the answer. The other part is . . . I am never depressed. I am somewhat optimistic, at least for the near future, I never complain about things, and I'm always forward-looking about my life. I have what the psychologists would probably consider the right kind of attitude toward life." ■

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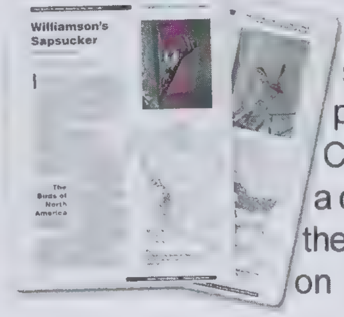

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HOW COMMON IS RARE?

by David S. Wilcove

Ecologists have come to realize that different patterns of rarity may require different conservation strategies

Very few of East Africa's birds have eluded Adam Riley's raptorlike eyes, so when he gets excited, you know something good is about to happen. Such was the case one afternoon in late July, when we were hiking along a trail in Uganda's Bwindi Impenetrable Forest. Adam, at the lead, stopped suddenly and motioned for the rest of us to catch up. A thrush had darted across the trail in front of him, and something told Adam this wasn't just any old thrush. Of course, the Impenetrable Forest doesn't get its name for nothing, and amid the vine tangles, dense undergrowth, and tall trees, the bird in question seemed as lost as the proverbial needle in a haystack.

A soft trill emanating from the understory prompted Adam to reach for his tape recorder. Once he had recorded a few seconds of the call, he replayed it at a louder volume. Nothing happened. He tried again. Still nothing. On the third playback, a bird bolted out of the thicket and perched momentarily on the branch of a nearby tree. With our binoculars we could see that it was indeed a robin-sized thrush with a rich orange head and chest, an olive back, two broad white wingbars, and—most importantly—a dapper black mark extending below its eye like a teardrop. Our mystery bird was an Oberlaender's Ground-Thrush, one of East Africa's rarest and least-known birds. It was a new species for everyone, including Adam.

In a subsequent letter, Adam described the Oberlaender's Ground-Thrush as "near-mythical," a species known to very few ornithologists. Part of its mystique lies in its highly restricted range. It occurs in only a handful of sites in the Democratic Republic of Congo (formerly Zaire) and Uganda, and even within these areas, it appears to be quite uncommon. Years may pass between sightings.

Oberlaender's Ground-Thrush is indisputably a rare bird, and I consider myself fortunate to have seen one. That brief sighting, however, led me to ponder a bigger question: What exactly do we mean when we call a bird rare? While the dictionary defines rare in rather straightforward terms—"unusual," "uncommon," "thinly distributed over an area"—ecologists have come to realize that rarity is not a simple concept. Much of the credit for this insight goes to the late Cornell ecologist Deborah Rabinowitz, who published several key papers on rarity in the early 1980s. Focusing on the vascular plants of Britain, Rabinowitz noted that there were, in fact, three components to rarity. One is geographical range—a species can have a broad or narrow range. Another is habitat specificity—a species may inhabit a variety of different habitats or it may be restricted to just one or a few specialized types. A third component is density—a species may occur at high or low densities in suitable habitat. By putting together different combinations of these components and finding species that fit each combination, Rabinowitz was able to show that there were, in fact, many types of rarity.

Her work was important for both academic and practical reasons. By understanding the different patterns of rarity, ecologists move a step closer to understanding the factors that determine how many species occur in a particular region or in the world as a whole. And from a practical perspective, different patterns of rarity may require different conservation strategies to prevent extinction. Although not all rare species are in immediate danger of extinction, they are certainly at greater risk of becoming endangered. Since there is no reason to believe that Rabinowitz's work applies only to plants, it might be instructive to apply it to birds.

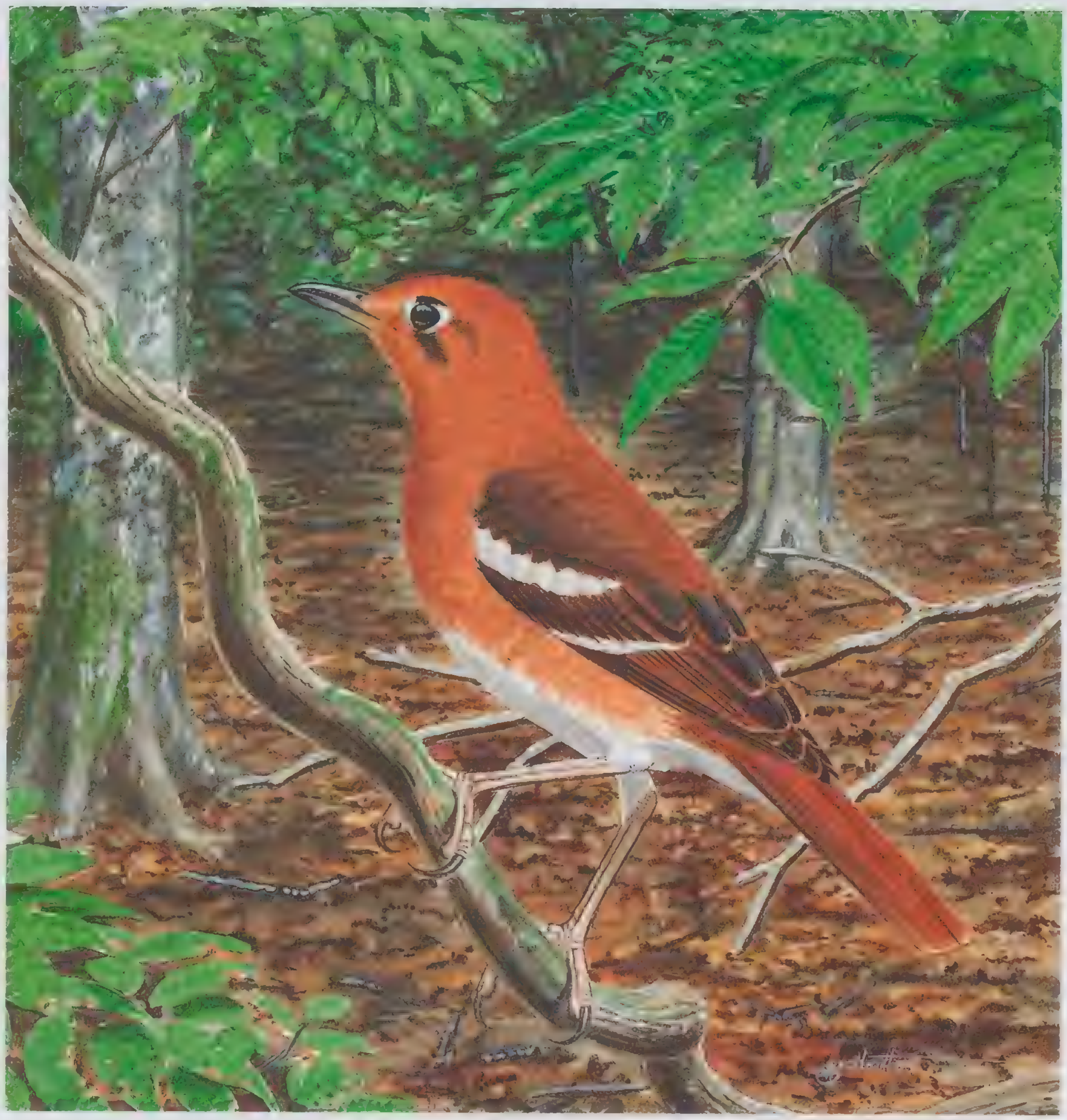
Let's begin with the Oberlaender's Ground-Thrush. With its narrow geographical range, habitat specificity (forests), and low population density, it scores high on all three components of rarity. An even more striking example from the United States would be the Nukupuu, a Hawaiian honeycreeper restricted to the rainforests of Maui and Kauai. Within its tiny range and narrow habitat, the Nukupuu has always been a decidedly uncommon bird. It has not been reliably sighted in a number of years and may well already be extinct. Species matching this rarity profile are quite vulnerable to threats such as habitat destruction, disease, and the spread of alien species.

Like the Nukupuu, the Golden-cheeked Warbler and Tricolored Blackbird have narrow ranges and specific habitat requirements (mature oak-juniper woodlands and freshwater marshes, respectively). However, unlike the Nukupuu, both occur at relatively high densities in the right places. Their greater abundance does not make them invulnerable to harm, however. In fact, the warbler is on the federal endangered species list due to severe habitat destruction and cowbird parasitism, and the blackbird is on the Partners in Flight (PIF) Watch List. The Yellow-billed Magpie also

ILLUSTRATION BY JOHN SCHMITT

has a very restricted range, but it is a habitat generalist. For that reason, it is not considered an endangered species, although it too is on the PIF Watch List—a wise decision given that a single new threat, such as West Nile virus, could quickly decimate its sizeable population, currently estimated at 180,000.

A narrow range clearly increases the chances that a species will become endangered. A large range, on the other hand, does not guarantee security. Consider the cases of the Spotted Owl and Ferruginous Hawk. Both occupy relatively large areas of the West. Both also require specialized habitats (old-growth coniferous forests for the owl, shortgrass prairies and sagebrush plains for the hawk) and occur at low densities, so it is not too surprising that both are in trouble. The Spotted Owl is famously on the U.S. endangered species list. The Ferruginous Hawk is considered a threatened species in Canada, and it has been proposed for listing in the United States on several occasions. Its future may well depend upon whether federal and state authorities take steps to protect the remnants of North America's once-vast prairie dog colonies, because prairie dogs are a favorite prey item of this magnificent hawk.



"With its narrow geographical range, habitat specificity (forests), and low population density, the Oberlaender's Ground-Thrush scores high on all three components of rarity."

Given that we have expressed concern about species with narrow ranges and species with wide ranges, about habitat specialists and habitat generalists, a frustrated bird watcher might well wonder whether any species exist that we don't have to worry about. What about a wide-ranging, high-density, habitat specialist such as the Brown-headed Nuthatch, which dwells in southern pine forests? Although unlikely to disappear entirely, the Brown-headed Nuthatch has nonetheless declined in much of its range due to habitat destruction, earning it a place on the PIF Watch List, too. Somewhat more secure are wide-ranging, low-density, habitat generalists such as the Common Raven. Their broad distributions and their ability to utilize a wide range of habitats render them less vulnerable to human disturbance. But they are certainly not invincible, as evidenced by the elimination of ravens from much of their range in the northeastern United States a century or two ago. The regrowth of the Northeast's forests, coupled with a lessening of direct persecution by farmers, has enabled ravens to stage a welcome comeback in much of their former range.

Which brings us to the last category: wide-ranging, high-density, habitat generalists. The Carolina Chickadees and White-breasted Nuthatches busily extracting sunflower seeds from my bird feeder are, I think, quite unlikely to become endangered due to human activities. Their apparent success delights me. Yet I wonder how many other species share their good fortune, how many other birds can be considered safe in the face of an increasingly human-dominated world.

BirdLife International estimates that at least one of every eight bird species on earth is at serious risk of extinction. BirdLife's standards for inclusion on its endangered list are commendably strict, and a number of the species discussed above would not qualify. I suspect that the actual proportion of the world's avifauna at risk of large-scale declines—if not outright extinction—is considerably higher than BirdLife's estimate. ■

Further Reading:

Rabinowitz, D., S. Cairns, and T. Dillon. 1986. Seven forms of rarity and their frequency in the flora of the British Isles. Pages 182-204 *in* Conservation biology: the science of scarcity and diversity. M. E. Soulé, Ed. Sinauer, Sunderland, Massachusetts.

Rich, T. C., et al. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, New York.

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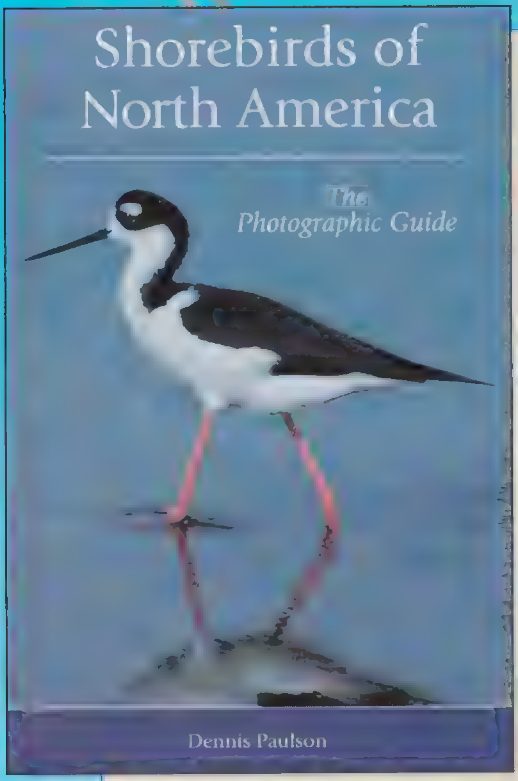
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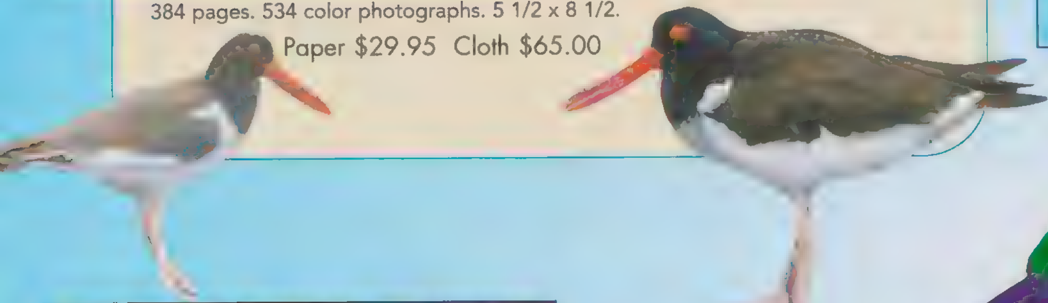

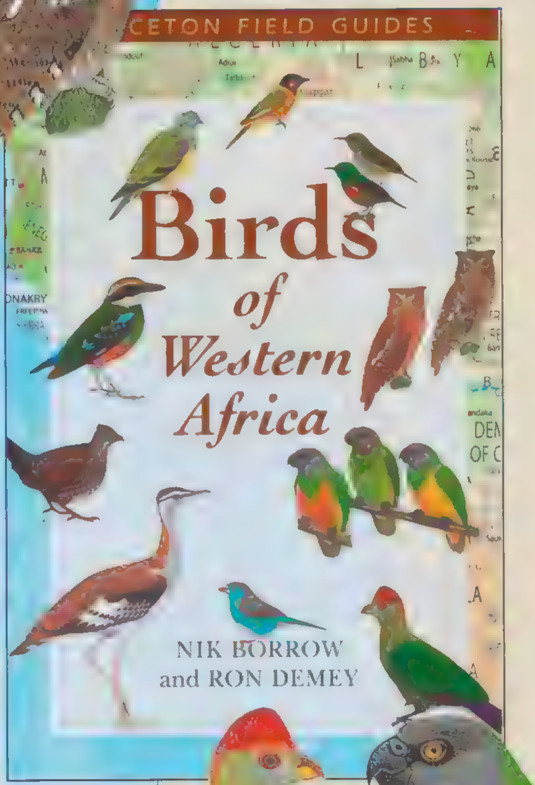
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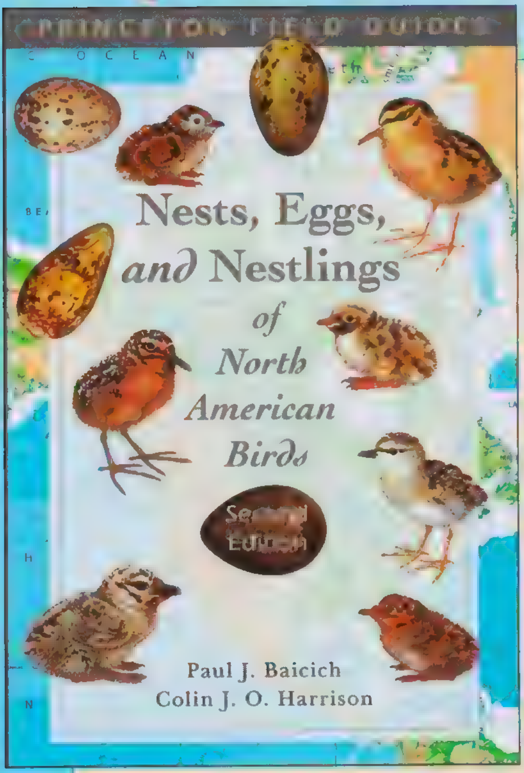
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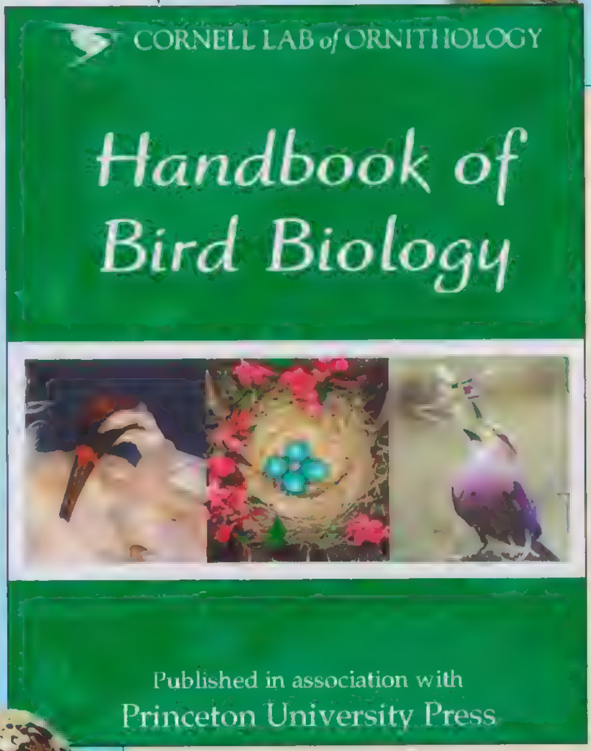
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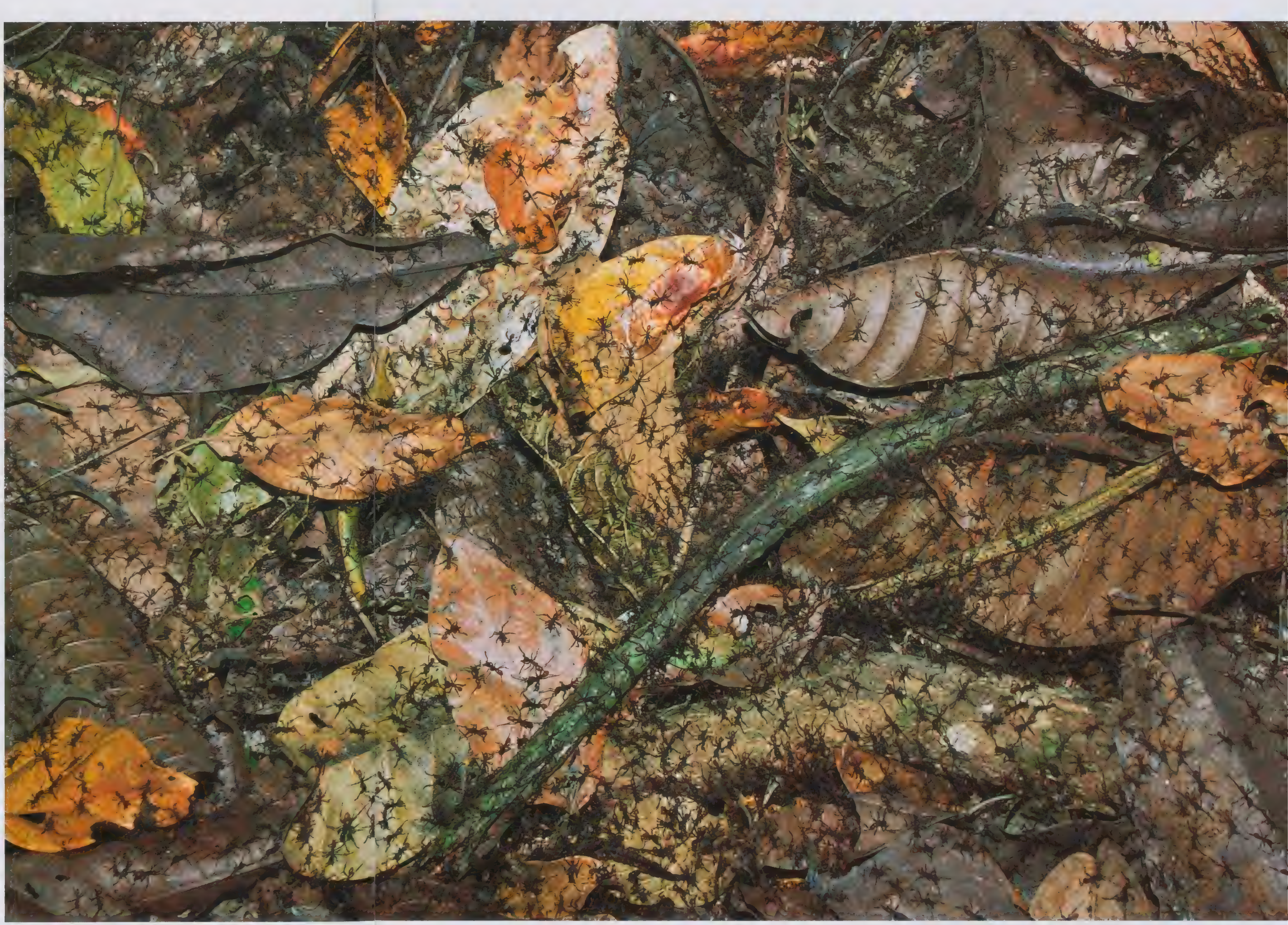
DEDICATED FOLLOWERS

BY PETER WREGE
PHOTOGRAPHS BY MARIE READ

Birds gather to feed on the swarms of insects fleeing invading army ants

The humid afternoon air hung heavily all around me, seeming to add its own resistance as I thrashed through a tree-fall that blocked my path through the Panamanian rainforest. I grabbed a dangling liana for a boost over a fallen branch. Then with a "YOW!" I jerked away, missed my footing, and came down with a crash into the tangle, my hand and arm covered with ants.



When thousands of army ants (above) are on the move in a Central American rainforest, hordes of insects and other creatures flee before them, providing a bounty for birds such as the Ocellated Antbird, at left.

In fact, every surface I could see was seething with ants, and they were swarming all over me. At last—success! I had found a colony of army ants (or they had found me). I retreated from the pincers and stings of hundreds of now very alarmed ants and brushed them off my arms and legs.

It was only then that I noticed it was strangely quiet. No wonder I had blundered right into the midst of the swarm—where were the antbirds? Several species nearly always patrol at the leading edge of army ant swarms, dashing to and fro, calling excitedly as they snatch up insects and other small creatures fleeing the onslaught of the ants. It was this frenetic activity that was missing from the swarm I had just stumbled upon.

Soon the reason was clear. On the east side of the tangle I found a 4-inch-wide column of ants pouring across the forest floor into a hole at the base of a huge kapok tree. Defended by big soldiers facing outwards from the column with scimitar–like jaws at the ready, thousands of workers passed, all moving in the same direction. Although it was only midafternoon, this colony was calling off its foraging for the day. These ants were clearly in the stationary rather than nomadic phase of their reproductive cycle, because otherwise they would raid until nearly sunset. I headed back to Pipeline Road, the dirt track running through our study site, to get Marie and show her my discovery.

My wife, Marie Read, and I had come to Panama's Soberania National Park, bordering the Panama Canal, to study and photograph the interactions between army ants and the community of birds that follow them through the forest. For anyone visiting the Neotropics, the excitement of watching a raid by army ants, attended by a diverse bird assemblage, is an unforgettable experience. A variety of animals, from primates to lizards to parasitic flies, are attracted to raiding army ants, but the most common followers are the so-called antbirds in the family *Thamnophilidae* and the woodcreepers (family *Dendrocolaptidae*).

The ants I had found were *Eciton burchellii*, one of only two species of army ants that regularly attract ant followers. Ant followers depend on ants that regularly move en masse through the forest using a foraging tactic called "swarm raiding." The ants form an umbrella-like front line that moves inexorably across the forest floor, scouring the leaf litter for arthropod prey. In the process, these swarms flush out insects and small vertebrates that would otherwise remain hidden in the litter, making them available to the accompanying birds. Driver ants of Africa also attract bird followers, but none of these birds depend on the ants to find their food. In the Neotropics, though, a dozen or more bird species have become "professional" ant followers, obtaining more than half of their food in association with army ants. Superficially, this relationship looks commensal—benefiting one organism without harming the other, much like the familiar association between Cattle Egrets and large grazing mammals. I was intrigued by the possibility that the relationship binding army ants and antbirds was more involved and more interesting, and it was this that drew us to Panama.

Army ants move across the forest floor, scouring the leaf litter for arthropods. Ant followers such as the Northern Barred-Woodcreeper (left) and the Bicolored Antbird (above) obtain more than half of their food by exploiting the prey these ants flush.

Next morning, as the first grays of dawn filtered down through the trees, we arrived at the base of the kapok tree, its huge buttress roots meandering across the forest floor. We were already drenched with perspiration in the steamy dawn, and we welcomed a quiet rest without the weight of our packs. We sat down to wait for the ants to emerge. Dawn is one of the most enchanting times to sit quietly in a tropical forest. Nighttime creatures still occasionally trill, croak, and chirrup as the dawn chorus of forest birds begins to build.

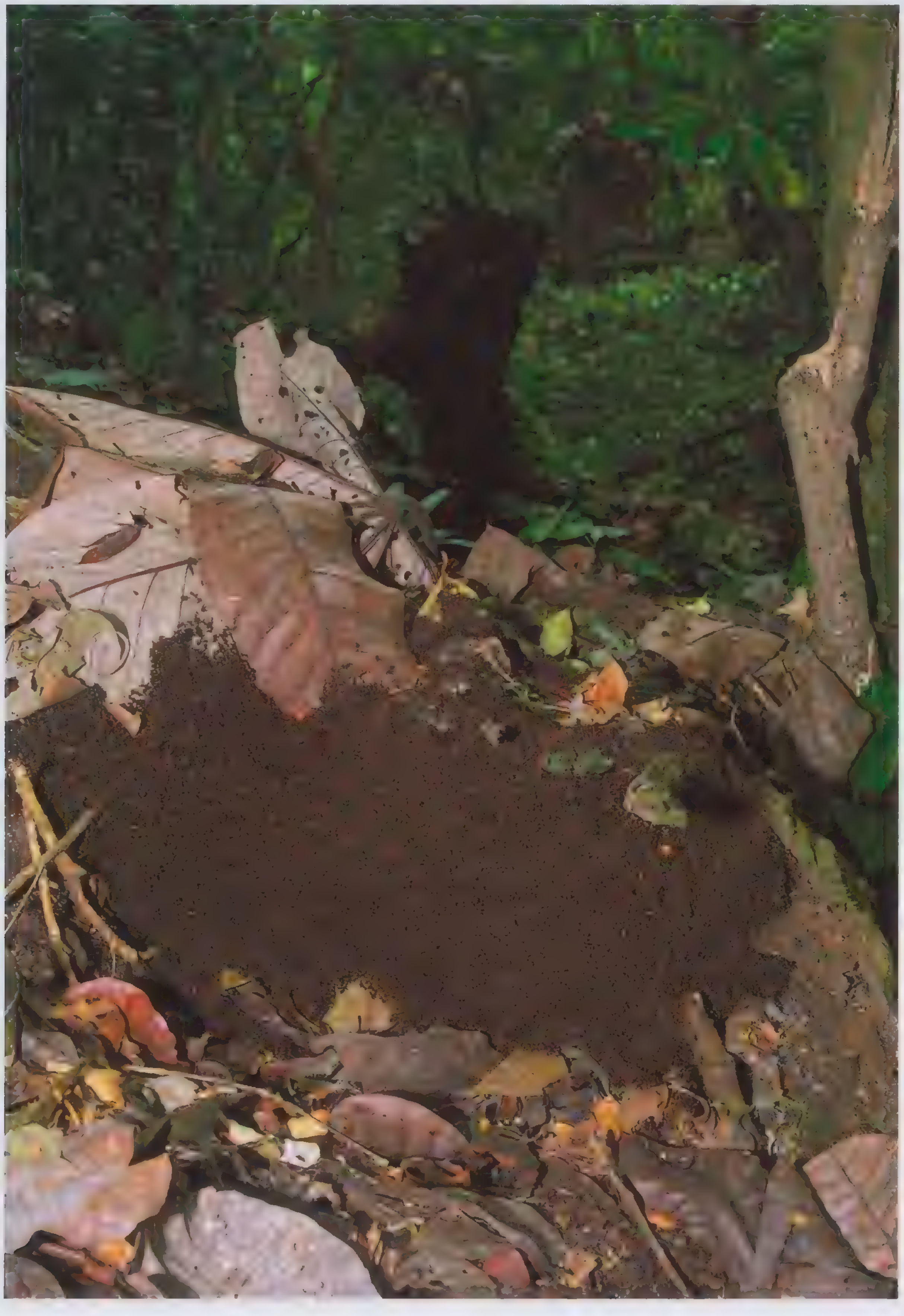
As we sat quietly, a pair of Bicolored Antbirds appeared, giving soft calls back and forth to one another. They hopped around the base of the tree, perched and preened for a few minutes, and were gone.

Army ants sometimes form a temporary camp called a bivouac (below), consisting of layer upon layer of worker ants, each grasping each other's legs. The queen and the developing brood lie in the center of the basketball-sized tangle of ants. Author Peter Wrege (facing page) examines an army ant bivouac at the base of a kapok tree.

On this morning, we were thrilled to hear the first raucous calls of a nearby howler monkey troupe echoing through the trees. Soon the ghostly whooping of motmots and the insistent krekking calls of a Keel-billed Toucan began.

We were not the only ones waiting for the ants. As we sat quietly, a pair of Bicolored Antbirds appeared, giving soft calls back and forth to one another. Rather plain brown-and-white birds, they have a light blue patch of skin around the eye typical of many antbird species. They hopped around the base of the tree, perched and preened for a few minutes, and were gone. A Northern Barred-Woodcreeper hitched in a woodpecker-like fashion up a nearby tree. Then a single Ocellated Antbird flew in to perch on one of the tree roots and peered at the cave-like opening at the base of the tree. Most antbirds have subdued colors, but this is one of the handsomest, with bright blue around the eyes, a black throat, and a black-spotted rusty chest.

Antbirds keep constant tabs on the activities of three or four army ant colonies at a time, canvassing perhaps 120 acres of forest. This assessment probably shows where the best foraging is to be had. The pupation of the most recent brood of larvae triggers the 21-day stationary phase, and the queen uses this time to lay a new batch of eggs. With no larvae to feed, colonies often send out weaker raids or may skip foraging altogether on some days. When this happens, the antbirds must locate a more active colony, preferably one in the nomadic phase. As new larvae hatch and young adults emerge from the pupae, the 14-day nomadic phase begins and intensive foraging resumes. Each night, the entire colony moves to a new location. Neither the antbirds nor we biologists could afford to miss the transition from a stationary to a nomadic colony. Marie and I wanted to work with nomadic colonies because these would provide the best photographic opportunities and lots of birds for my experiments.


PETER WREGE

Back at the kapok tree, we saw few outward signs of a developing raid, so I decided to have a look. Donning a headlamp, I gingerly stuck my head into the opening at the base of the tree. A huge hollow filled the heart of the kapok, but just two feet away from my face hung a basketball-sized ball of tangled army ants. In keeping with the military jargon, this temporary camp is called a bivouac. It is constructed entirely of layer upon layer of worker ants grasping each other's legs. In the middle of the ball reside the queen and the developing brood, while vigilant soldiers constantly patrol the surface of the gently writhing bivouac. On this morning, the entire floor of the cavern was covered with the cream-colored pupal cases of newly hatched workers, and more and more ants were milling around the inside surface of the tree. We were in luck—this colony was on the move.

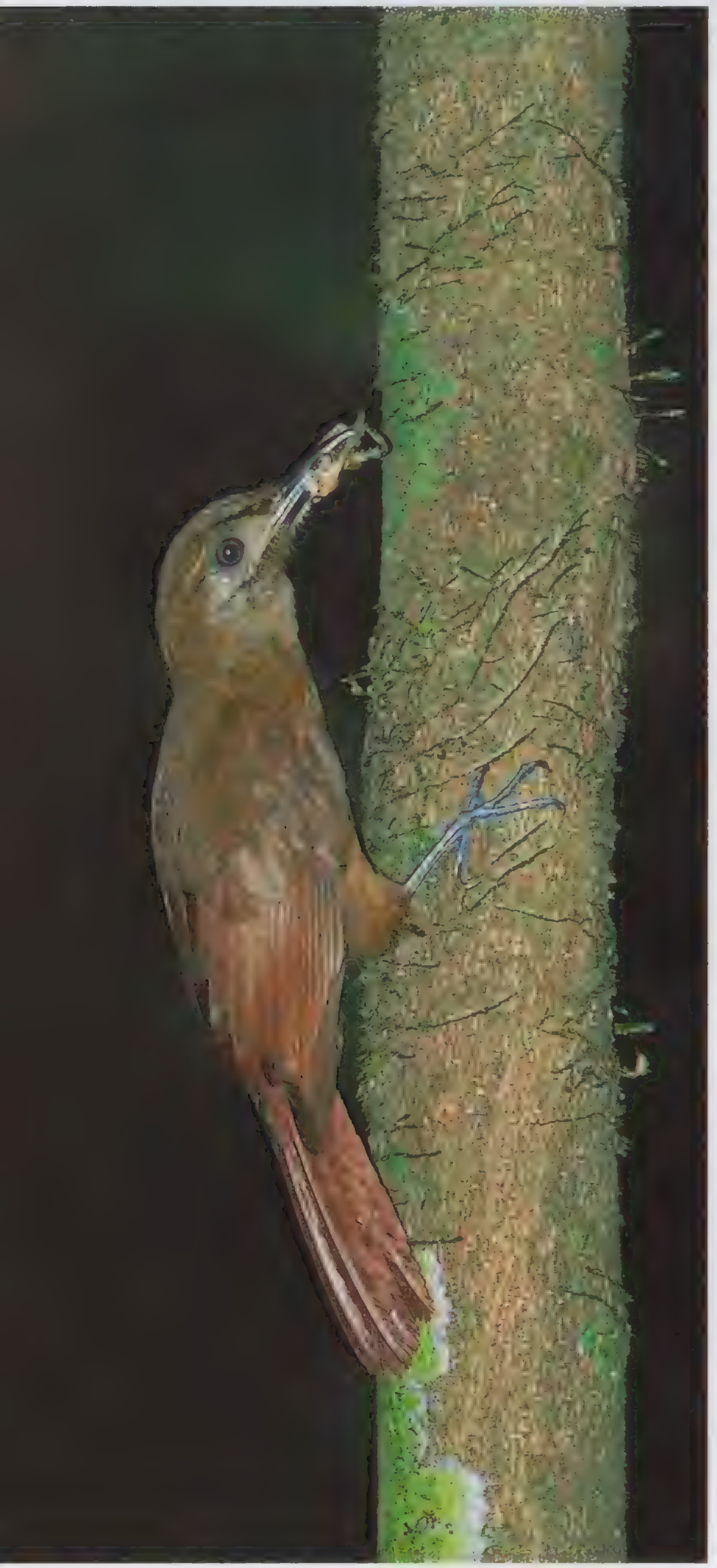
Minutes later, hundreds of thousands of ants boiled out of the tree cavity in a continuous seething sheet. At first they seemed directionless, but gradually, through a complex communication system of chemical cues, or pheromones, a consensus emerged about which direction to strike out. The raiding swarm became organized and began to move northeast, cutting a swath 15 feet wide across the forest floor. More and more ants came from the bivouac, swelling the mass of raiders. Now the real fun (and work) would begin.

Somewhat intimidated by this mass of insects with food on their collective mind, Marie cautiously moved closer to the swarm front, where the photographic opportunities would be best. I circled around to get in position well in front of the approaching ants, to watch how the foraging interactions among the antbirds would develop. Already a pair of tiny Spotted Antbirds had arrived, joining the single Ocellated Antbird. The ringing calls of woodcreepers announced their arrival at the banquet. The community of antbirds maintains a complex yet flexible organization in the presence of active army ants—one that allows these birds to exploit a food resource that moves unpredictably over large areas of the forest. Although pairs of each of the participating species maintain breeding territories, these are not defended for exclusive use. If an army ant colony is foraging through one pair's territory, that pair allows others of its species to feed at the swarm, but the resident pair is dominant over them and gets access to the best foraging locations. Should the raiding swarm move out of one pair's territory into another's, the dominance relationship immediately shifts in favor of the new territory owners. An interspecific hierarchy based on size also exists, and in most cases the antbirds that specialize in foraging at ant swarms can dominate the species that forage less consistently in that manner.

As I watched the approaching raid, I could hear a strange sound like a soft rain underlying the calls of the antbirds. But it wasn't rain. It

Minutes later, hundreds of thousands of ants boiled out of the tree cavity in a continuous seething sheet.

was the sound of hundreds of insects, large and small, flying and leaping up into the air and falling back into the litter. The swarm front spread out like a 30-foot-wide umbrella, advancing slowly and inexorably across, through, up, and over every structure in its path, insects and small vertebrates fleeing before it. And suddenly there were birds everywhere, calling excitedly. In the midst of the swarm was an Ocellated Antbird, darting down to snatch a fleeing cockroach or cricket, then springing up to cling briefly onto a vertical stem to gobble down its prey before jumping down to catch another. Several Bicolored Antbirds foraged just ahead of the swarm. One darted for an insect and then hopped up onto a perch near the center of the swarm, giving a loud buzzing alarm note as the larger Ocellated Antbird displaced it. All around and higher above the ground there were other species. The pair of diminutive Spotted Antbirds kept to the swarm edge, ready to snatch up any insects within reach. Numerous Plain-brown Woodcreepers and a couple of strikingly patterned Northern Barred-Woodcreepers clung to trees, watching intently for insects and other arthropods fleeing up the tree trunks ahead of the ants and swooping from trunk to trunk as the swarm moved along. There was so much bird activity that it was hard to keep track of it all.

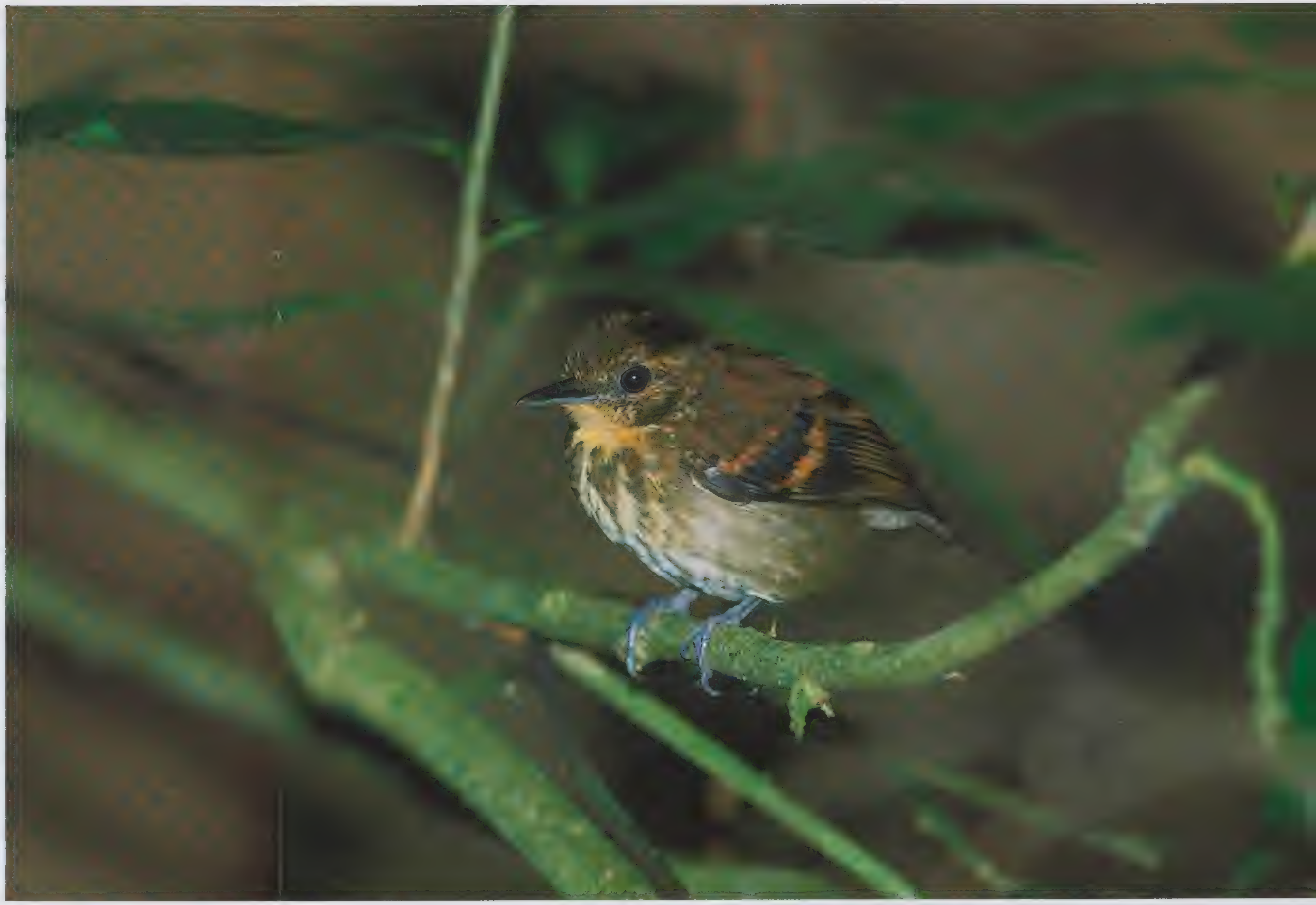


The teeming mass of ants along the raid-front was now only a few feet away and heading straight for me, but I stayed where I was to begin the process of habituating the birds to our presence. I must admit that it was really creepy when the ant swarm flowed over my boots and dozens of ants started up my pant-legs. Fortunately they realized the foraging wasn't going to be so good up there, and they soon retreated to try their luck elsewhere. As long as I didn't shift my feet around, the whole frenetic system just crawled, hopped, and flew past me and on through the forest.

The ant colony we had found turned out to be a gold mine both for Marie's photography and for my experiments. The ants were working their way into a particularly diverse part of the forest, and in the following days we started seeing several new species of birds foraging at the swarm. Before long the professional ant-followers were quite habituated to our presence—Marie could often get surprisingly close to the birds she was photographing, and I could set up experiments without disturbing the birds. Best of all, we were now within the home range of one of the holy grails of bird watchers in the Neotropics: the Rufous-vented Ground-Cuckoo. Most rainforest birders are lucky to get a fleeting glimpse of this elusive and increasingly rare, roadrunner-like bird. With the addition of the ground-cuckoo and other "occasional" ant-following species, such as the White-whiskered Puffbird and Gray-headed Tanager, the full range of dynamic interactions among this community of birds was fascinating to watch.

Ant-following specialists have certain adaptations that allow them to use perches that other species cannot—strong legs and feet let the antbirds cling easily to vertical stems, and sharp-clawed toes and tail feathers with stiff, projecting shafts help the woodcreepers scale tree trunks. Less specialized species, such as the puffbird, must use overhanging branches and twigs, where the capture rate is lower, which might explain why none of these species specialize in following ants.

We were lucky to see why the Rufous-vented Ground-Cuckoo doesn't take up the top spot



Many ant followers have adaptations that allow them to use perches that are unsuitable for other species—sharp claws and long stiff tails enable the Plain-brown Woodcreeper (left) to scale tree trunks. Strong legs and feet enable the Spotted Antbird (above) to cling easily to vertical stems.

> *The teeming mass of ants along the raid-front was now only a few feet away and heading straight for me, but I stayed where I was to begin the process of habituating the birds to our presence.*

One day at an army ant swarm, Marie Read photographed a Rufous-vented Ground-Cuckoo (below), an elusive and increasingly rare roadrunner-like bird, sought after by birders who visit Panama. This species and the White-whiskered Puffbird (at right) are occasional ant followers.

in the ant-follower hierarchy, tending to work from the sidelines even though it is by far the largest bird attending swarms anywhere in the Neotropics. When you are trying to walk among millions of ants scouring the forest floor, it is a drawback to have bare feet. Every time the cuckoo dashed into the fray to snatch a particularly large cockroach or tasty lizard, it beat an equally fast retreat and then stamped and pecked at its legs and wings to get the ants off.

We also discovered another reason why the ant-following specialists keep tabs on multiple army ant colonies: the dominance hierarchy can make life miserable for species low on the totem pole. When many ant-following specialists were at the swarm, the little Spotted Antbirds, and even Bicolored Antbirds outside their own territories, spent more time fleeing aggressive chases than they did catching insects. Throughout the day, individual birds, including the dominant professionals, disappeared for extended periods, perhaps to check out other army ant swarms. Whenever this happened, Spotted Antbirds, the occasional Gray-headed Tanager, or even a woodcreeper would dive into the prime locations in the midst of the fray for some high-quality foraging time. But depending on a bird's position in the overall hierarchy, it might sometimes be better to forage at some other swarm, where there are fewer competitors—even if that swarm is on a weak raid or in poor habitat.

Days later, with a dozen experimental trials in the bag, we had a clearer picture of the relationship between the ant swarms and their followers. When army ants capture large prey, such as katydids, cockroaches, or mantises, several ants pile on to help subdue and dismember these big insects, a process that can take half an hour or more. We counted these persistent aggregations in a standard, measured area of forest floor where ant-followers had been present and where we had excluded them. Consistently fewer large prey were captured by the raiding swarm when birds were also foraging at the front than when we excluded them from the area. The result was clear: ant-following birds are parasites on army ants. Detailed analyses later showed that the birds inflict a significant cost on the ant colony in terms of energy intake. The ants capture about 15 percent fewer prey items when raiding in the presence of antbirds, and this means less food for growing larvae and slower colony growth.

Our work over, we decided to enter the forest before first light on our last morning, to enjoy the sounds and sights of a tropical forest just as the nocturnal denizens were ceding prominence to their diurnal counterparts. The troupe of howler monkeys was a long way off, and their morning chorus came softly to our ears, sifting through the boles of trees and tangled skeins of lianas. A ground fog added to the ethereal feeling. Unseen birds began to sing. From down the small valley that had served as foraging route for the ants yesterday, we heard two Bicolored Antbirds alternating soft calls to one another as they slowly approached. They seemed to be moving along the course of yesterday's frantic foraging activity, as though looking for where the ants might be this morning, keeping each other informed of their findings. How do these birds keep track of a colony on the move? Can they guess the new bivouac location based on the previous afternoon's activities, as I could? Or do the professionals give calls to alert the rest of the community of ant-followers that the colony has been found, because another time it might be they who need a cue to where the food is? I contemplated these questions as the light grew and the spectacular forest was fully revealed at the start of a new day. But these were questions for a future study. This morning Marie and I simply sat quietly and marveled at the complexity of relationships among organisms in the tropics. Out of a tree cavity a few feet off the ground poured the swarming ants. The bicolors were there and soon a White-whiskered Puffbird and two Ocellated Antbirds appeared. The ant-followers were arriving and once more the move was on. ■

Peter Wrege is a behavioral ecologist in the Department of Ecology and Evolutionary Biology at Cornell. Marie Read is a world-renowned bird photographer whose work frequently appears in this magazine.

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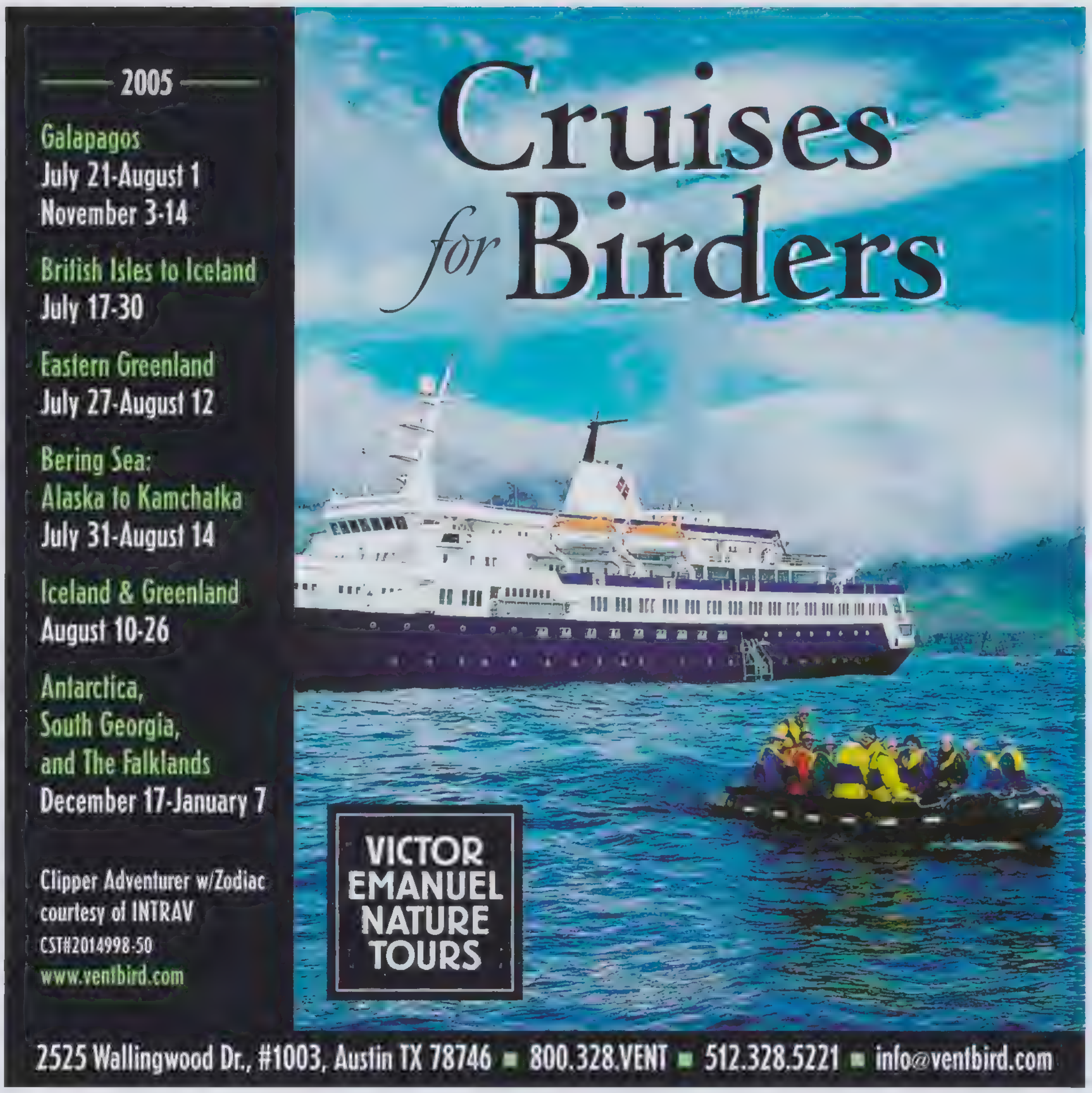

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2005

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November 3-14

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July 17-30

Eastern Greenland
July 27-August 12

Bering Sea:
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July 31-August 14

Iceland & Greenland
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WELCOME WANDERERS

TEXT AND PHOTOGRAPHS
BY PAUL ZIMMERMAN

Flame-colored Tanager sightings are increasing in Arizona

Sightings of the Flame-colored Tanager (*Piranga bidentata*) seem to be on the upswing in southeast Arizona. During the past dozen years or so, reports of this species have been averaging about one annually, with the majority occurring in recent years. The first record for the state was in 1985 in Cave Creek Canyon in the Chiricahua Mountains, near Portal, Arizona. Since then, sightings of this handsome visitor from south of the border have been concentrated in Madera Canyon in the Santa Rita Mountains near Green Valley and in Miller Canyon and Ramsey Canyon in the Huachuca Mountains near Sierra Vista. At least three sightings have occurred in Ramsey Canyon over the past few years and several more in Miller Canyon. In the spring of 2003, birders periodically spotted a male Flame-colored Tanager along the road near Madera Kubo Bed and Breakfast in Madera Canyon. The following spring, a pair nested in an oak tree just across from Madera Kubo. Word of this pair spread rapidly, and groups of birders from around the country and abroad continually clogged the road in front of the bed and breakfast. (Rumor has it that the Green Valley Chamber of Commerce was looking to hire a sorcerer to enchant this pair into returning each spring.)

The Flame-colored Tanager is such a rarity in the United States that not all field guides list it. Moreover, some field guides describe (and depict) it as be-

The subspecies of Flame-colored Tanager found in western Mexico—the kind being seen in Arizona—is bright orange in color, whereas the ones in eastern Mexico are flame red.

WHERE TO GO

The three locations where Flame-colored Tanagers have been seen most often recently are already popular birding hotspots. The possibility of sighting this rarity just adds icing to the cake.

MADERA CANYON: 130 species of birds have been known to nest here, and another 100-plus have been sighted.

Lodging:

Santa Rita Lodge Nature Resort
1218 S. Madera Canyon Road
Madera Canyon, Arizona 85614
Lyle and David Collister
Telephone: (520) 625-8746
Web site: <www.santaritalodge.com>
email: <lcollister@theriver.com>
Fourteen species of hummingbirds have been seen on the resort grounds. Guided bird walks are available February through August.

Madera Kubo Bed and Breakfast
1259 Madera Canyon Road
Madera Canyon, Arizona 85614
Cora and Richard Lansky
Telephone: (520) 625-2908
Web site: <www.maderakubo.com>
email: <MaderaKubo@aol.com>
In the spring of 2004, Summer Tanagers, Bullock's Orioles, and Western Wood-Pewees nested within a few yards of the Flame-colored Tanagers at Madera Canyon.

Chuparosa Inn
1300 Madera Canyon Road
Madera Canyon, Arizona 85614
Nancy and Luis Calvo
Telephone: (520) 393-7370
Web site: <www.chuparosainn.com>
email: <info@chuparosainn.com>
In the spring of 2004, birders could lounge on the patio and watch a pair of Elegant Trogons that nested in a cavity in a nearby snag and produced two fledglings.

MILLER CANYON: More than 150 species of birds have been sighted here, including 15 species of hummingbirds.

Lodging:

Beatty's Guest Ranch and Orchard/ Nature Retreat
2173 E. Miller Canyon Road
Hereford, Arizona 85615
Edith and Tom Beatty
Telephone: (520) 378-2728
Web site: <www.beattysguestranch.com>
email: <beattysguestranch@earthlink.net>
Fourteen species of hummingbirds were seen on the Beatty's grounds in a single day on June 30, 2002.

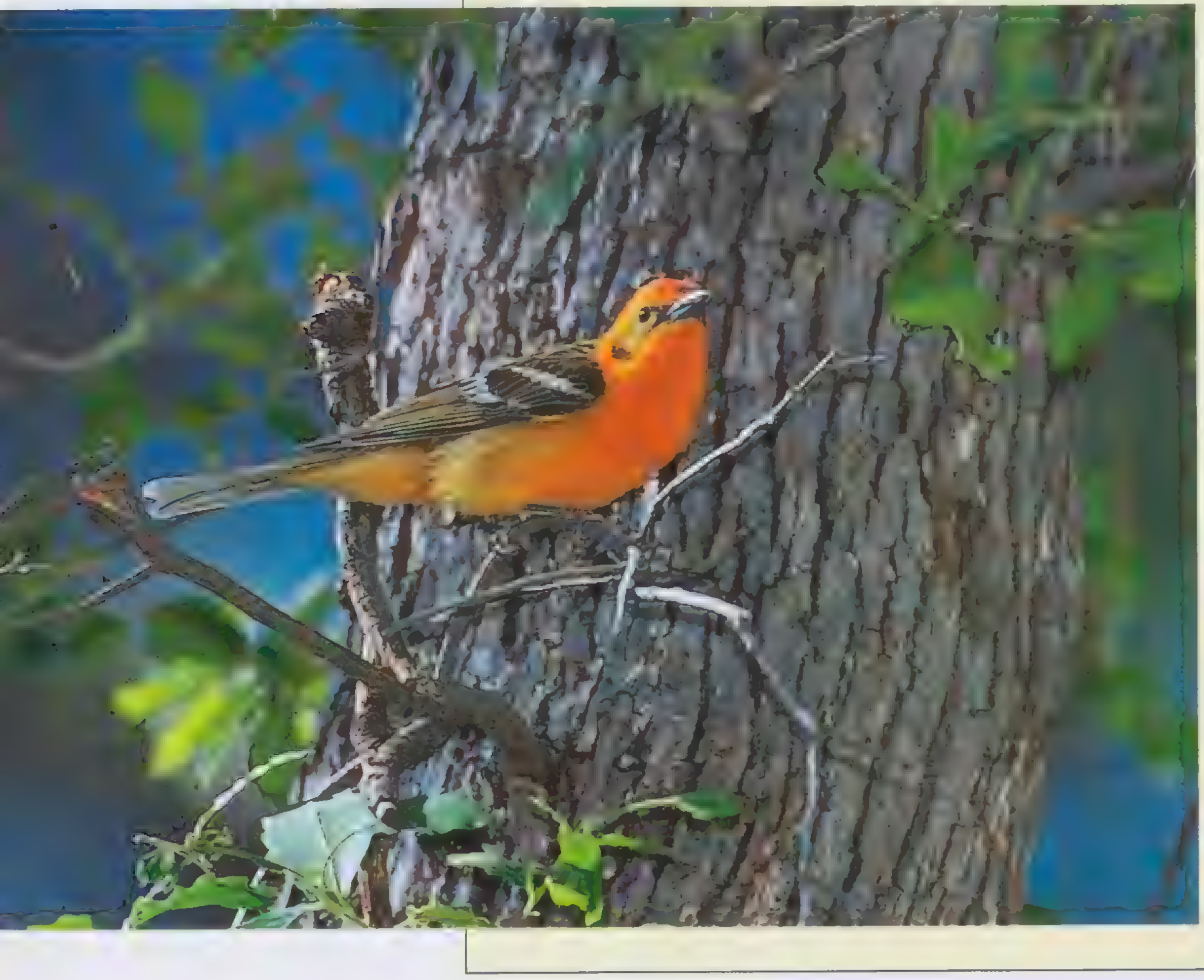
RAMSEY CANYON: One hundred and seventy species of birds have been recorded in this canyon, and it is one of the top spots in the United States for hummingbirds. It is also the site of The Nature Conservancy's famed 380-acre preserve.

Ramsey Canyon Preserve
27 Ramsey Canyon Road
Hereford, Arizona 85615
Telephone: (520) 378-2785
Web site: <www.tncarizona.org/preserves/ramsey.asp>

Lodging:

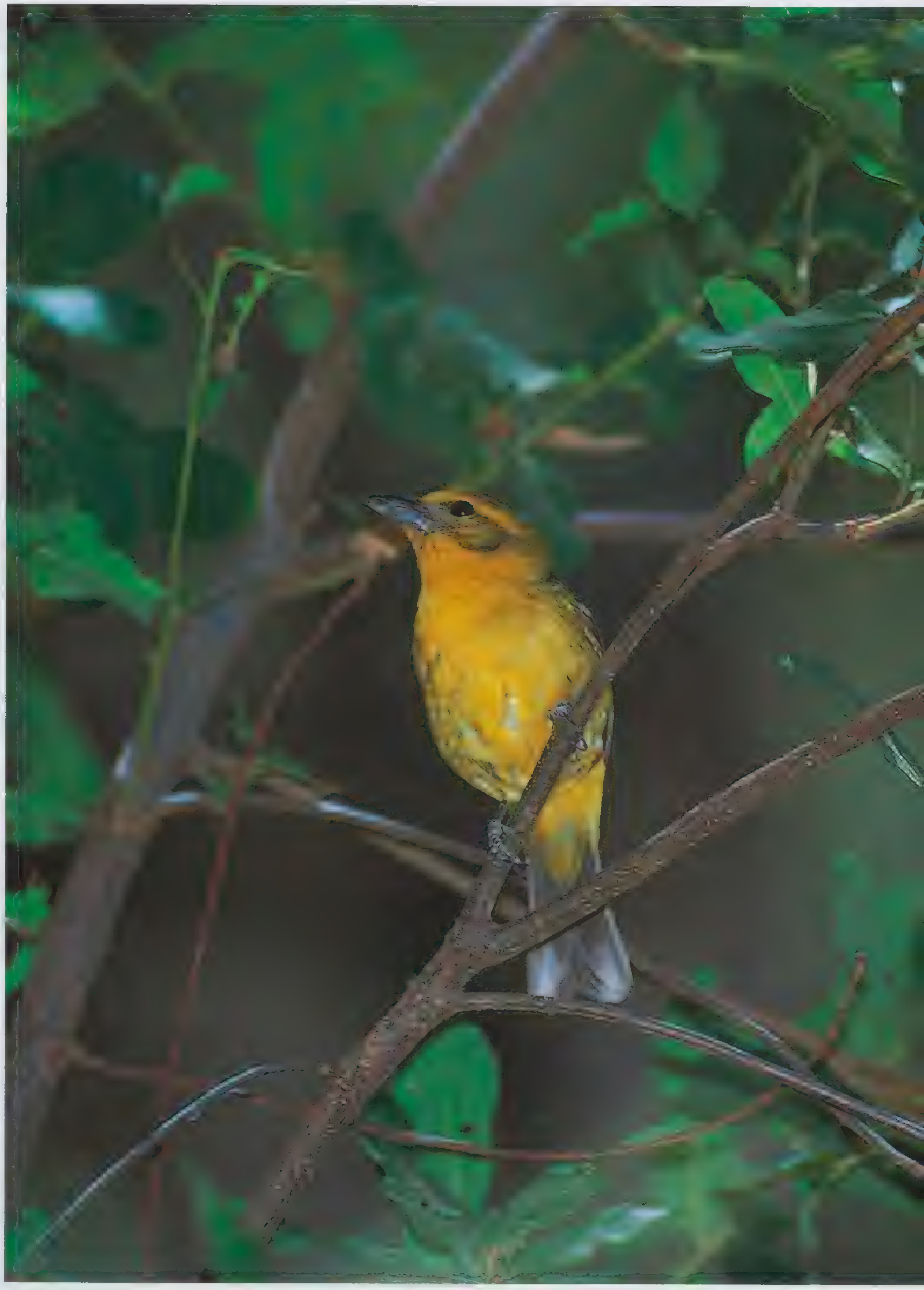
Ramsey Canyon Inn Bed and Breakfast
29 Ramsey Canyon Road
Hereford, Arizona 85615
Telephone: (520) 378-3010
Web site: <www.ramseycanyoninn.com>
email: <lodging@ramseycanyoninn.com>

The author photographed the Flame-colored Tanagers (below and on facing page) at Madera Canyon, near their nest. The possibility of seeing one of these spectacular birds is just one more reason for visiting the "sky islands" of southeastern Arizona.



ing fire red, whereas others describe it as flaming orange. The reason is that the west Mexican subspecies (*P. b. bidentata*), the bird being seen in Arizona, is bright orange, whereas the bird of eastern Mexico (*P. b. sanguinolenta*) is, as its name implies, of a reddish hue.

Though it is certainly delightful that Señor bidentata is gracing us with more visits, it has demonstrated a vexing predilection—if a female is not to be found, its inclination is to pair with a female Western Tanager (*Piranga ludoviciana*), which looks much like a female Flame-colored Tanager. The resulting hybrid males may be difficult to identify as such. Female hybrids may be unidentifiable in the field. It appears that of the various nesting pairs sighted, at least three will go into the official records as having an unhybridized male and female—one in each of the three canyons.



The habitat that these straying tanagers seem to be exploring is the well-watered, food-rich "sky islands," borderland mountains isolated by valleys of desert or grassland. Noted for their exceptional biological diversity, these mountains range from an elevation of some 2,400 feet at the desert floor to more than 9,000 feet, encompassing five life zones, from desert scrub through pine-oak woodlands to coniferous forest. These sky islands have long been known as avian Edens, offering birders many opportunities to fatten their life lists. The Southwestern Research Station of the American Museum of Natural History near Portal, where scientists from all over the world come to do ecological research, displays a collection of local flora and fauna that includes nearly 250 species of birds. A number of these—such as the Elegant Trogon, Montezuma Quail, Sulphur-bellied Flycatcher, and Painted Redstart—are at or near the northern limit of their ranges.

Why Flame-colored Tanagers are being seen more frequently now we don't know. Whatever the reason, it appears—at least to those of us who wear rose-colored glasses—that these colorful birds may be extending their range northward. ■

Paul Zimmerman is a freelance writer and photographer based in Tucson, Arizona.

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INVADERS FROM THE NORTH

A Great Gray Owl sits out a snowstorm in southern Ontario. Fifty-nine of these birds were counted in a single day near Orillia, Ontario, and another 46 outside Ottawa. Minnesota counts were even higher, surpassing 200 birds in a day.

Text and photographs
by Gerrit Vyn

This winter, Great Gray Owls, Northern Hawk Owls, and Boreal Owls came south in unprecedented numbers

It has been a magical winter for birders and a difficult one for owls across the north country. Forced south by hunger, Great Gray Owls have been reported in unprecedented numbers from Minnesota to Quebec. Northern Hawk Owls and Boreal Owls have also moved in large numbers and added to a winter spectacle that has attracted birders from throughout the continent. The combination of a major irruption of northern owls, the large number of observers, and the rapid exchange of information via the Internet has led to the most well-documented movement of northern owls in history. It has also given countless people the chance to experience firsthand one of the most mysterious and magical of North American birds, the Great Gray Owl.

Reports of a Great Gray Owl irruption began trickling in from remote parts of Ontario and Manitoba in late October. Within weeks, birds were appearing in northern Minnesota and along the northern shores of Lake Superior and Lake Huron. These first arrivals were just a hint of things to come. Throughout November, more and more great grays appeared in northern Minnesota, with birders reporting 30 to 50 birds in a single outing by the end of the month. In addition to the birds moving into Minnesota from Ontario and Manitoba to the north and northwest, birds were being funneled along the northern shores of Lake Superior with large concentrations being seen around North Bay, Ontario, in early December. As all of these great grays poured into Minnesota, numerous people—birders and nonbirders alike—were getting out to see them. The Two Harbors Christmas Bird Count recorded a North American record of 56 Great Gray Owls, only to be outdone by the Sax Xim, Minnesota, count, which turned up a whopping 70 great grays and 42 Northern Hawk Owls the following day. At the same time in Ontario, Great Gray Owl sightings gradually progressed east and south from Sault Ste. Marie and the shores of Lake Huron to locations south and east of Algonquin Provincial Park. By the end of December, great grays were turning up as far south as Toronto and as far east as Ottawa. Large concentrations were also being seen near Orillia, about 90 miles north of Toronto. Within two weeks the numbers in many of these locations exploded. One-day totals reported by individual birders included 59 birds near Orillia and 46 outside Ottawa. At the same time, Minnesota reports were leaping off the charts. Dozens of reports approaching and surpassing 100 birds in a day were coming in from northern Minnesota.

By the end of January 2005, birders in Minnesota had reported as many as 226 great grays in a single outing and the Minnesota Ornithologists' Union reported records indicating the presence of at least 1,715 Great Gray Owls, 300 Northern Hawk Owls, and 400 Boreal Owls in the state—the highest numbers ever recorded for each species. January also brought good numbers of Great Gray Owls to Quebec and northern Wisconsin, and birds made exciting appearances in North Dakota, Iowa, and Maine. In early March, as I write this, the owls are continuing to move southward in Minnesota and Wisconsin, and New Yorkers recently celebrated the arrival of a Great Gray Owl from across the St. Lawrence River.

The crash of vole populations across the boreal forest of Canada is the primary cause of this northern owl irruption. Although periodic fluctuations in small mammal populations are a regular occurrence, vole numbers are down to their lowest levels in many years. Numbers were so low that few Great Gray Owls bred this past season, leading to an influx composed mainly

A Great Gray Owl shakes the snow from its head during a squall. At the time of writing, these birds were continuing to move southward, providing numerous people with stunning views of these usually difficult-to-find northern owls.

By the end of January, birders in Minnesota had reported as many as 226 great grays in a single outing and the Minnesota Ornithologists' Union reported records indicating the presence of at least 1,715 Great Gray Owls.

of adult birds. Unfortunately, many of these adults will not return to breed in the coming year. With so many hungry birds seeking food across areas with increasing human activity, large numbers of birds have been injured or killed in collisions with motor vehicles. More than 200 have been killed in Minnesota alone. Great Gray Owls are especially susceptible because of their low flight style and their habit of hunting along roadsides, where voles are often more abundant. These losses are in addition to those caused by the combination of starvation, winter weather, and the stresses of long-distance migration.

Northern Hawk Owls have also massed in record numbers in northern Minnesota with others scattered throughout Ontario. The number currently wintering in northern Minnesota is estimated at more than 300 birds. Boreal Owl movements may have gone unnoticed if not for the efforts of bird banders, who recorded record numbers this fall in Minnesota and Ontario. As winter has progressed, more and more boreals have turned up in Minnesota, Ontario, and New York, often hunting in the vicinity of winter bird-feeding stations. One Boreal Owl was even being seen for some time in New York City's Central Park.

Just how far the south the owls will move this season and when they will return to the north remain to be seen. One thing is certain: their movements won't go undocumented by birders and biologists. It has been a winter that won't soon be forgotten by those who have experienced the magic of these magnificent owls.

For more information about the owl invasion or to enter your own sightings, visit eBird: <www.ebird.org/content/news/ggowinvasion.html>. ■

Gerrit Vyn is a wildlife photographer and an audio engineer at the Cornell Lab of Ornithology's Macaulay Library. Visit his web site: <www.gerritvynphoto.com>.

A massive crash of the vole population across the great boreal forest in Canada is the primary cause of this year's irruption. The number of Great Gray Owls (facing page), Boreal Owls (above), and Northern Hawk Owls (left) has far surpassed anything ever recorded in southern Canada and the northern United States.

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Picture Perfect

BACKYARD BIRD PHOTOGRAPHY

Text and photographs by Arthur Morris

Designing the perfect picture-taking setup

People are always asking me to recommend excellent places to photograph birds. Actually, one of the most productive areas may be as close as your own backyard. Where else do you have such complete control over the setup and such freedom in terms of where and when you want to take pictures? In some ways, backyard bird photography is like studio photography, even though the subjects are, of course, free, wild, and unrestrained. Several important issues should be considered when you design setups for bird photography.

Where should you locate your setup?

Where to place your feeders, water, and perches are extremely important decisions. You must take into account both the availability and direction of natural light. Your longest effective focal length plays a large part in this decision as well. Photographers working with 300mm lenses obviously need to be closer to their setups than those working with 600mm lenses. In many cases you are dealing with a two-edged sword. The closer you position the feeders to your home, the less you need to depend on long focal lengths and teleconverters and the more convenient it usually is (especially during colder weather). The farther from the house you place your setup, the more opportunity you will have to work with direct natural light.

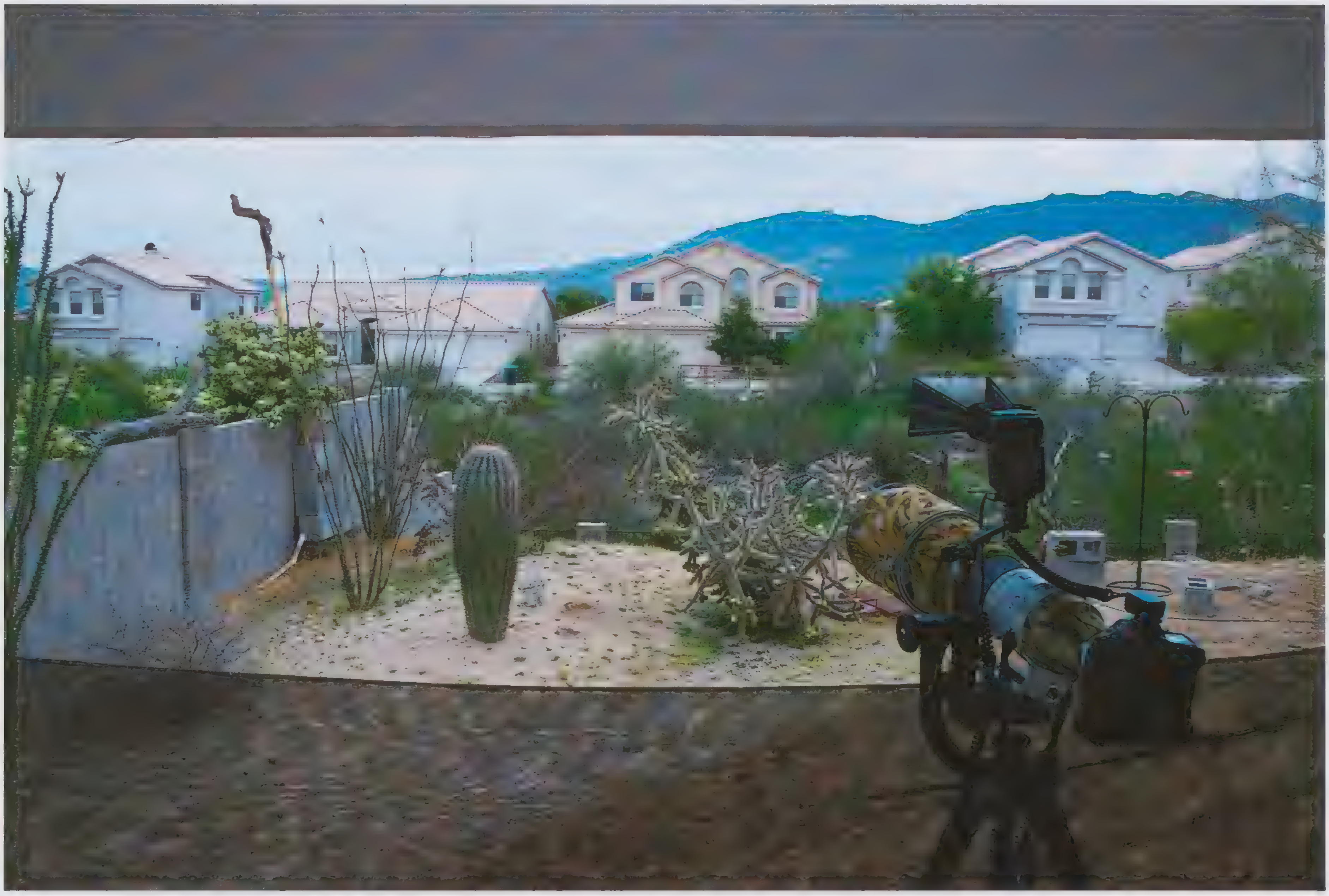
The quality of the background is of great importance, especially for folks who—as I do—want their images to have a clean, graphic look. The ideal background is evenly lit and the color and texture are rather uniform with no unusually light or dark areas. But perhaps the most important factor is the distance from the birds' perches to the background elements. If you place your feeders in a spot where the woods, brush, or other vegetation are right behind your setup, it will be impossible to come up with pleasingly out-of-focus backgrounds (even when you are working with wide-open apertures). On the other hand, even backgrounds of relatively poor quality will look great most of the time if the perch-to-background distance is 40 feet or more. In these cases, it will be easy to produce soft, clean backgrounds of pure or mottled color. As a general rule, the distance from the background to the main perches should be at least equal to the distance from the photographer to the main perches. Double the distance is better. Lastly, the closer your setup is to rich habitat, the more birds you will attract.

Will you be working from inside your house or from a blind?

You have several options when you are photographing birds on your own property. You can work from inside your home, from a permanent or semipermanent blind, from a portable blind, or from your car. You can even just stand or sit behind your tripod or lie on the ground without any kind of concealment. Although these are the most likely scenarios, other options might be better in a variety of situations. Do not be afraid to think outside the box. When choosing your location, you must carefully consider the availability of natural light, and, if applicable, the angle of the light—remember, you almost always want your shadow pointed at your subject. For those fortunate enough to be able to work with direct sunlight in early morning or late afternoon, my very great preference is that the photographer be positioned to use direct frontal lighting.

Should you conceal yourself from the birds and, if so, in what manner?

This is a difficult question to answer. I love to work in plain sight of my



The author photographed the Cactus Wren (facing page) from this simple blind (above) in a friend's suburban backyard in Tucson, Arizona.

subjects. When you photograph at established feeders, you should have many excellent opportunities simply by remaining still and moving slowly. A lot depends on how accustomed the birds are to humans. It is almost always best to work from a blind at feeding stations where people do not frequent the area on a daily basis, when working with species that are unduly shy or skittish, or when attempting to photograph songbirds at water drips set up to attract migrants. Portable or throw-over blinds usually work well in these situations, though the latter are quite confining.

Attracting the birds

In many situations, it is easy to attract birds to setups with food, water, or both. Feeders may be store-bought or homemade, and tube feeders, feeding trays, and hopper feeders all work well. In general, I do not get very excited about photographing birds on the actual feeders, though such images are often fairly easy to market. Simply scattering seed on the ground and attempting to photograph the birds that respond can yield decent results at times, but it is generally better to use some sort of feeder and to erect a perch or perches nearby. Many great resources are available today covering all aspects of bird feeding for various geographic regions.

Various types of water features can be used to lure birds within camera range. They can vary in complexity from a small pan filled with water to a large pool replete with entry and exit streams, small waterfalls, and a system for recirculating and filtering the water. A simple water feature may be constructed as follows: dig a shallow pool. Line it with black plastic sheeting, the thicker the better. Cover the edges with dirt or build a rock border around the pool. Fill the pool with water. Hang a 2-liter soda bottle filled with water above the pool. Poke a single pinhole in the bottle so that a steady drip results. The sound of dripping water attracts the birds. Lastly, erect an attractive perch above your tiny pool. The birds often land on the perch before coming in to drink or bathe, or they may use the perch after they have finished using the water. Traveling photographers sometimes use a simple setup like this to attract migrant or resident songbirds. In general, the drier the conditions, the more effective a water drip will be. Do check with the authorities before setting up a water feature in a park or refuge; such activities may violate a regulation.

Types and characteristics of good perches

Choosing and positioning perches for setup-style bird photography is an art, but with a bit of care and some careful searching, anyone should be able to come up with more than a few decent ones. The best perches are often branches that can easily be broken or cut off dead trees or large, lifeless bushes. At times dead-straight perches work well; in other situations gently curved perches may be perfect. Generally the perches should be angled slightly away from your position so that the bird cannot alight on the back side of the perch. Some people use branches with leaves from living trees (and change them often out of necessity), others decorate dead-branch perches with flowers or freshly cut vegetation. Logs, tree trunks or stumps, chunks of driftwood, small- or medium-sized boulders, and weathered fence posts can also be used as landing spots for your avian subjects. Getting these larger perches to your location may be difficult, but in many cases the extra effort pays great dividends over time. Plant or tree skeletons may also serve as perches; my friend Ned Harris has some great cholla cactus skeleton perches in his Tucson backyard.

Many people have no concept of what a good perch should look like, and others are simply careless. Good dead-branch perches, logs, stumps, tree trunks, and fence posts should be colored medium to dark gray or brown. Light-toned or bleached-white perches are usually too distracting, because they create too much contrast, especially in direct sunlight. Worn, weathered branches without bark often make ideal perches. Look for perches that have character, with some interesting texture or an unusually rich color to the wood. At all costs, avoid perches with fresh scars from twigs or branches that have broken off. At times you can hide a single scar from view by ensuring that it is on the backside of the perch once the perch is set into place. When selecting small boulders as perches it pays to be just as discriminating. Finding a large lichen-covered rock that can easily be moved into position is always a huge plus. Except on cloudy days, avoid using white rocks for the reasons already mentioned. If you have a variety of quality perches on hand, the perches can be changed every few days so that your images will not have a look of stale sameness.

Whether you plan to photograph birds at the feeders outside of your kitchen window or are creating a permanent blind adjacent to a pond in bird-rich habitat, giving these matters careful consideration will greatly improve the quality of your images. Positioning yourself and the elements of your setup carefully, considering the placement and the qualities of your perches with even more care, and then bringing the birds to you with food and water will yield years of wonderful photographic opportunities. ■

Arthur Morris is a world-renowned bird photographer as well as an educator and author. Visit his web site at <www.birdsasart.com>.

Dead limbs placed upright in your yard will often attract birds to perch on them, providing a picturesque background. Above, a Gilded Flicker.

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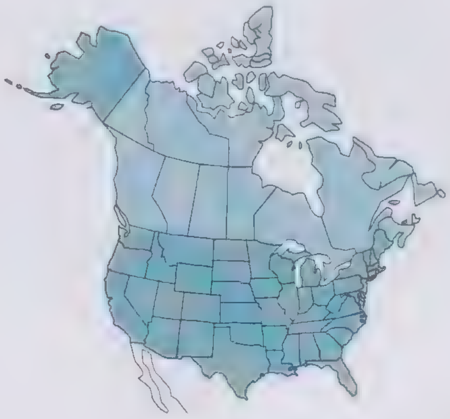

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June 14–20 2005
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Instructor: William Hayes

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Swift Ultra Lites ride again!

For years, birders in search of affordable, lightweight binoculars turned to the innovative Swift Ultra Lites, which earned a virtually uncontested "best buy" rating in our 1995 *Living Bird* review. Over the last decade, however, several manufacturers—most notably Eagle Optics, Nikon, and Leupold—have captured the mid-priced binocular market with better and better options for truly excellent quality at lower and lower prices. This balance may shift yet again as Swift introduces their completely remodeled Ultra Lite roof-prism binoculars. The small box containing the 8x42 Ultra Lites arrived at the Lab just as our massive binocular review was going to press (see "The Age of Binoculars," Winter 2005). I decided, therefore, to put them through the same test as the other 78 models, asking 10 critical reviewers to rate their optical quality, overall feel, and eyeglass-friendliness on a scale of 1 (poor) to 5 (excellent). Reviewers were impressed with these features, and the resulting overall "quality index" of 25.3 would have placed the Ultra Lites near the top of the "Mid-priced" category in our large review.

Compared directly with their closest competitor (Nikon Monarch 8x42), the new Swifts sport a similar rubber-coated, nitrogen-purged roof-prism body, very comparable phase-coated lenses, and an identical field of view. The pair I tested focused even closer than the Nikons, down to 5 feet, 4 inches, and the large focus wheel was smooth and fast. The twist-and-lock eyecups offered a similar nearly perfect view with eyeglasses. To my eye, the Ultra Lites provided a slightly crisper, more contrasty, and brighter image than the Monarchs, and they brought out more of the colors on a drake Mallard in evening light.

Although the Swifts have a solid, well-balanced and very comfortable feel, the moniker "Ultra Lite" no longer applies—at 25 ounces they are fully 15 percent heavier than the Nikon Monarchs and a bit heavier than the Eagle Optics Rangers. The body consists of smooth black rubber, making up most of the casing, with softer, blue or gray rubber insets and "knobs" providing a solid grip. One crotchety reviewer thought these binoculars were ugly, but my young daughters thought they looked really cool. Actually, both my 7- and 10-year-olds found them very easy to use, and the narrow inter-pupillary distance makes them ideal for young faces.

In a direct comparison with top-of-the-line 8x42 roof prisms, the Swift Ultra Lites show some expected fuzziness at the edge of the field and some barely noticeable color-fringing, but the overall image is remarkably sharp and bright. At a list price less than a third as high as the top models and a store price well under $300, these new Ultra Lites are an exceptional value.

RACHEL ROSENBERG

Although Swift only sent us the 8x42s, I recently checked out a pair of the new 10x42 models and was duly impressed. As with other low-cost 10x binoculars, the image was not quite as bright or crisp as the comparable 8x, with a noticeably narrower field of view. But housed in the same compact, comfortable package as the 8x42s, these more powerful Ultra Lites were certainly on a par with the similarly priced Nikon or Eagle Optics models. As always, I urge you to test drive these binoculars for yourself before buying, preferably in a direct comparison with other suitable models. But, for anyone in the market for very affordable 8x or 10x binoculars, the Swift Ultra Lites have clearly earned a place among the top choices.

—*Kenneth V. Rosenberg*

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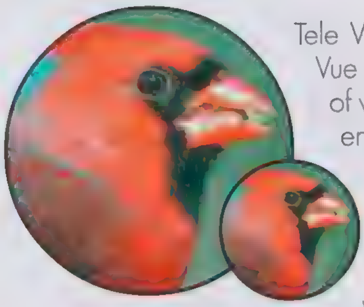

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The Catbird Seat

LAWN FLAMINGO

(Phoenicopterus rubercolis americana—and canadensis)

by Pete Dunne

STATUS: Common and widespread resident species; particularly common where beer is purchased in quart bottles and retired automobile tires find new life as decorative yard fixings.

DISTRIBUTION: Unlike its tropical cousin, found almost everywhere in North America, but distribution is both clustered and patchy.

HABITAT: Something of a habitat generalist occurring in a variety of habitat types but almost exclusively in habitats altered for human habitation. Places showing high concentrations of these birds include front yards (particularly small, postage-stamp parcels). Lawns are optional and, in coastal areas, this species adapts well to white gravel. Also found in trailer parks, at the entrances to private campgrounds, and in RV parks. In neighborhoods where streets are designated as "Oval" or "Terrace," this species appears most concentrated in backyards, often in close proximity to pools, patios, and wet bars.

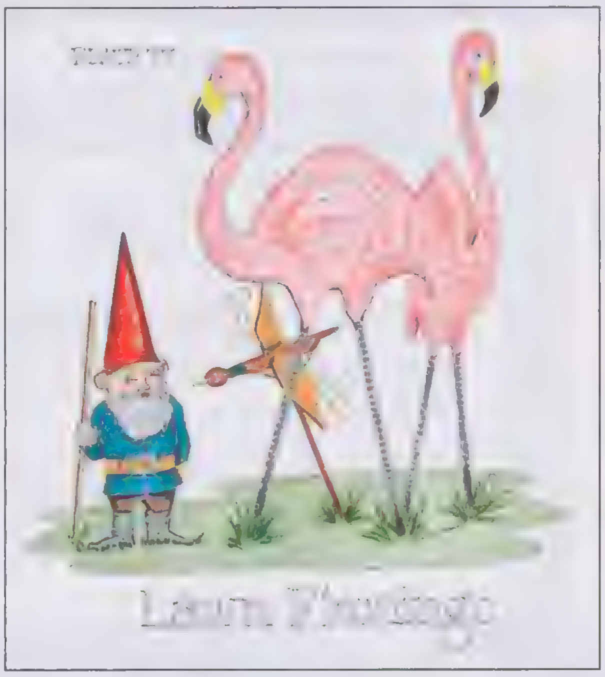
COHABITANTS: Ceramic deer, gnomes, whirly-gigs, opulently proportioned posteriors of weeding gardener-like cutouts, last year's Halloween decorations, plastic flowers, and large, black dogs chained to porches.

MOVEMENTS/MIGRATION: Nonmigratory, permanent resident (except those individuals frequenting RV campgrounds and snowbird parks). In winter, in regions subject to seasonal snow cover, often chooses to hibernate beneath a blanket of snow.

DESCRIPTION: A large, long-legged, long-necked, statuesque species (standing taller than the ceramic gnome, slightly shorter than the ceramic Bambi) with a heavy, near boomerang-sized-and-shaped bill; small head; long, slender neck (often held in an "S" shaped configuration); large, teardrop-shaped body; extremely long legs. Size varies, but most individuals are considerably shorter than the Greater Flamingo, from which they may be descended and very closely resemble.

Except (sometimes) for a dark tip on their bill, the birds are wholly bright pink. All ages and sexes are similar except some very old, very faded individuals may be bleached white, and albinism is not uncommon. Young, sometimes found in association with adults, are considerably smaller but otherwise identical to adult birds.

BEHAVIOR: Distinctly sedentary; apparently capable of maintaining the same rigid posture indefinitely. Sometimes wobbles or sways during high winds, but if the bird you are observing takes a step, be assured it is not a Lawn Flamingo. Usually solitary but occasionally found in small groups (rarely in excess of a dozen birds except in retail outlets specializing in yard fixtures). In such locations, birds cluster in big, pink bouquets, often adorning themselves with oak-tag labels emblazoned with the term "SALE." Young birds most commonly follow adults in a single file that never moves.



Seems indifferent to humans. Freezes when approached (defining the difference between immobility and utter immobility). Has even been observed to maintain statuary demeanor when peed upon by dogs or run over by lawn tractors.

Most commonly stands on flat, dry ground; occasionally on raised flowerbeds, upon stumps, or in shallow standing water. Stance is most often erect, but some individuals (particularly in regions subject to ground freezes and thaws) display a gravity defiant list that may be maintained for years. Expression: plastic.

FLIGHT: Except on rare occasions when birds are subject to tornado winds or category 2 to 5 hurricanes, they are flightless. During weather evading flights, birds make spare use of their wings and maneuver by tumbling end over end. Lands clumsily, showing little if any regard for habitat selection or self-preservation.

VOCALIZATIONS: Mostly silent. In extremely cold temperatures sometimes emits a cracking sound (akin to the sound of brittle plastic snapping) and during high winds has been known to whistle, creak, or moan.

PERTINENT PARTICULARS: Locating Lawn Flamingos is often simply a matter of driving down residential streets and keeping your eyes open for yards festooned with lawn art. (A direct correlation appears to exist between the amount of "art" found in a yard and the number of Lawn Flamingos—the more art, the greater the likelihood that multiple Lawn Flamingos will be present.)

A dwarf subspecies of Lawn Flamingo (*P. R. wobblensis*) inhabits the dashboards of cars, RVs, and pickup trucks. Regarded by some authorities as a separate species on the basis of size and mobility (Dashboard Flamingos sway as enthusiastically as Lawn Flamingos stay rigid), the birds are otherwise similar.

Also, although Dashboard Flamingos are mostly solitary, they may be found in association with hula girls and bobble-headed dogs, cats, and pro-football quarterbacks. ■

ILLUSTRATION BY JEFF SIPPLE

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LIVING BIRD

SUMMER 2005 VOLUME 24 NUMBER 3

GREETINGS FROM SAPSUCKER WOODS

As most of you probably know, we've had some very exciting times at the Lab of Ornithology during the past year and a half. It all started on February 27, 2004, when Bobby Harrison of Oakwood College and I had a close-up, unmistakable sighting of an Ivory-billed Woodpecker while we were canoeing through a bayou in eastern Arkansas. We had gone there in response to a sighting made just two weeks earlier by Gene Sparling, a wilderness kayaker who had been exploring the area's swamps and bayous.

It all seems so long ago now—the heart-stopping moment when the bird flew past in front of our canoe; the follow-up search, launched just days later; David Luneau's amazing videotape; and the press conference in Washington, D. C., this past April 28, when we told the world that the Ivory-billed Woodpecker still exists.

To commemorate the rediscovery of this most iconic of birds, we are devoting this entire issue of *Living Bird* to the Ivory-billed Woodpecker. We present the inside story behind the rediscovery and the consequent searches and also look at Cornell's long involvement with this species, starting with Lab of Ornithology founder Arthur A. Allen's 1924 discovery of an ivory-bill pair in Florida (see page 28). We also feature an essay by James T. Tanner (page 36) about Louisiana's famed Singer Tract, where he studied ivory-bills from 1937 to 1939 as a Cornell graduate student.

To learn more about the Ivory-billed Woodpecker, visit our web site <www.birds.cornell.edu/ivory>, which has in-depth information about the bird's natural history, catastrophic decline, and remarkable rediscovery. You can also view an excerpt from David Luneau's videotape in the "Video press release."

Tim Gallagher
Editor-in-Chief

Cover: Lab of Ornithology founder Arthur A. Allen took this spectacular portrait of a male Ivory-billed Woodpecker in northeastern Louisiana in 1935. The photographs and motion pictures he took on that expedition are still the finest images we have of this elusive species. For more of his pictures, see page 28.

Right: The Ivory-billed Woodpecker is one of the most spectacular birds of the southern swamp, but for the past half-century, most scientists believed it was extinct. The February 2004 rediscovery of the species provides hope that a viable population may still exist. Illustration by John Schmitt.

Back cover: Ivory-bill searcher Jim Fitzpatrick paddles down a bayou in eastern Arkansas, near where the bird was sighted in February 2004. Fitzpatrick himself saw an Ivory-billed Woodpecker less than two months later in early April. Photograph by Mark Godfrey, The Nature Conservancy.

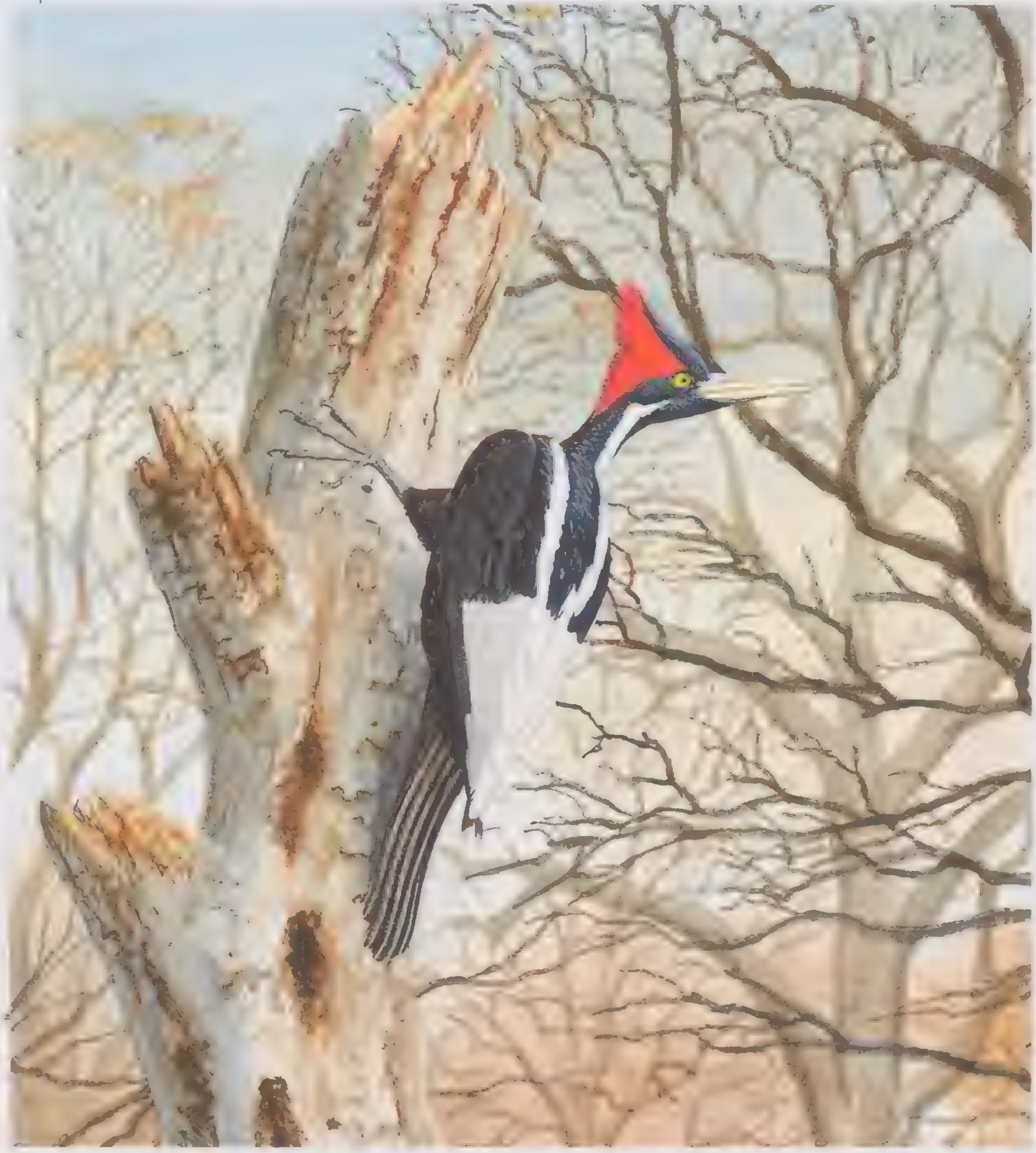
4 THE IVORY-BILLED WOODPECKER STILL LIVES
by John W. Fitzpatrick
The rediscovery of this iconic bird offers new hope for the neglected bottomland forests of the South.

8 THE BIRD NEWS HEARD ROUND THE WORLD
by Rachel Dickinson
When researchers from the Cornell Lab of Ornithology announced the rediscovery of the Ivory-billed Woodpecker, few could have predicted the international impact.

20 A BAYOU WITH A VIEW *by Tim Gallagher*
Searching for a ghost in the swamps of Arkansas.

28 ARTHUR ALLEN'S IVORY-BILLS
A portfolio of images from the early days of ivory-bill research, by the Lab of Ornithology's esteemed founder.

36 A FOREST ALIVE *by James T. Tanner*
With the ivory-bills, wolves, and panthers in the old Singer Tract.



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SUMMER 2005 VOLUME 24 NUMBER 3

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Cornell University

The Ivory-billed Woodpecker Still Lives

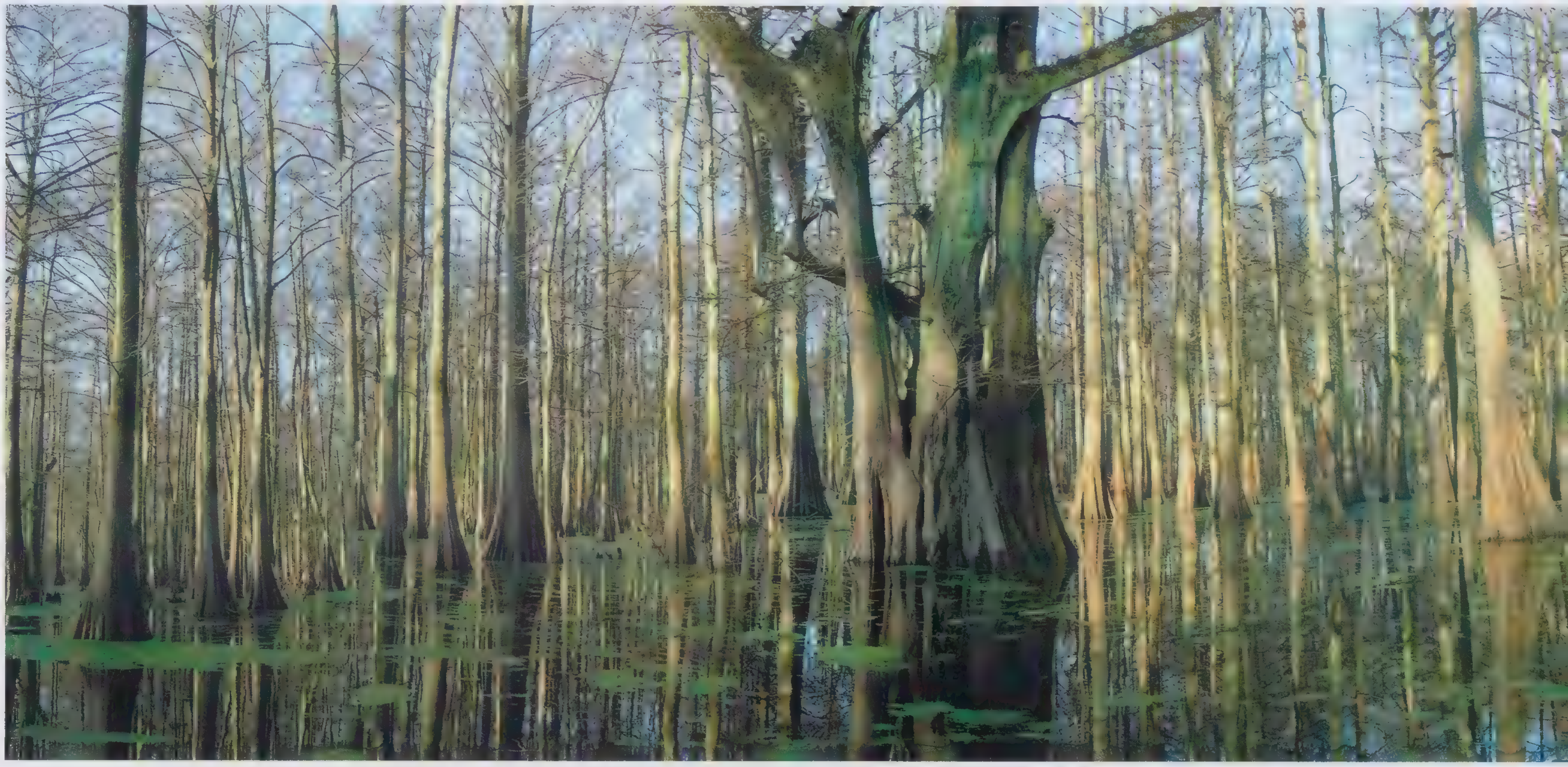
On April 28, 2005, in the auditorium of the U.S. Department of the Interior, accompanied by two cabinet members and two U.S. senators, a remarkable partnership of naturalists and institutions announced to the world that the Ivory-billed Woodpecker is not extinct. Represented in the group were scientists from the Cornell Laboratory of Ornithology, The Nature Conservancy, and the University of Arkansas at Little Rock, agency personnel from the U.S. Fish and Wildlife Service, Arkansas Game and Fish Commission, and Arkansas Natural Heritage Commission, a professor of art at Oakwood College in Huntsville, Alabama, and a naturalist-outfitter turned folk hero named Gene Sparling, from Hot Springs, Arkansas. The audience alternated between hushed tones and spontaneous applause as the cast of characters was introduced. Tears met many eyes. The politicians rejoiced and pledged support for a recovery effort.

Science
125
AAAS

The journal Science *(above) featured the rediscovery of the ivory-bill in the Big Woods of Arkansas, at right.*

We feel both unspeakable joy and a somber recognition of responsibility in being closely associated with this discovery and partnership. Beginning in March 2004, Lab scientists organized and conducted an exhaustive effort to learn more about this mysterious bird and its vast home, the Big Woods of eastern Arkansas. The Nature Conservancy took bold steps to secure more than 18,000 new acres of forest or forest-restoration land in the vicinity of the woodpecker sightings. Working together, our two organizations engaged a number of private philanthropists who were willing to take the risk and donate significant resources for both the research and the forest conservation efforts. Gradually, we also brought the state and federal agencies into the loop, as these agencies are the principle managers of the Big Woods. They, in turn, began preparing for the inevitable onslaught of public attention and visitation, and developing strategies for management and public education in the region. We felt strongly that all of these activities would benefit from being shielded from the enormous public attention we knew the discovery would generate. For a host of reasons, we also knew that the secret should not be held indefinitely.

Early on, we made two important decisions. First, we would work hard through the winter and spring of 2005 to gain as much information as we could about the bird or birds that had been sighted. Our rule was "information first, documentation second," which in part explains why we have so many sightings in the absence of pictures. Fleeting glimpses of a woodpecker flying across an opening brought the binoculars up first, thus in a few cases providing observers with a detailed glance at key field marks for a precious second or two before the bird disappeared. Second, we were determined to treat this as a scientific discovery, not a bird-watching event. Therefore, we needed to accumulate physical, tangible evidence for the existence of the species and to present our best evidence in a reputable, peer-reviewed scientific journal before discussing the discovery in public. We chose *Science* magazine, the flagship technical weekly published by the American Association for the Advancement of Science (AAAS). Our brief article was accepted for publication on April 25, 2005—exactly one year after David Luneau secured the historic video that became the centerpiece of our article. Coincidentally, but for unrelated reasons, our secret began to leak on that same day, so we hastily arranged the news conference in which we made the information public. Editors at AAAS worked feverishly with us for two days to prepare the final version of the paper and its supporting online materials in time for their publication date that week. We owe them special thanks.



SCIENCE COVER COURTESY OF AAAS/ILLUSTRATION BY GEORGE MIRSCH SUTTON; PHOTO AT RIGHT BY CLARK JONES

Amid the public jubilation and media frenzy associated with this discovery, we must remain deeply sober about the realities of how little we know and where the woodpecker stands. After more than a year of work and thousands of person-hours by as many as two dozen searchers scouring the Big Woods, we have only a small handful of reliable sightings, a single poor-quality video, and a small collection of recorded acoustic signatures that match both the display drum and the nasal *kent* call of the Ivory-billed Woodpecker. We have no evidence of a breeding pair and not even a reliable place where we can consistently relocate the bird. Contrary to some headlines, we have not documented the return of this majestic species. Rather, we have uncovered—once again—evidence that North America's rarest and most endangered bird species is not yet extinct. This event has happened before. In the 1920s Arthur Allen jubilantly announced that he had seen a pair in northern Florida (see page 28). A short time later, two local taxidermists who had heard about the rediscovery shot both birds. In the 1930s the species was rediscovered in northeastern Louisiana, only to be wiped out within a decade when the great Singer Tract forest was logged. In the 1950s, credible sightings in northern Florida prompted the National Audubon Society to purchase a preserve along the Chippola River. When the woodpecker stopped being seen, Audubon sold the preserve. In the late 1960s the woodpecker was spotted (and tape recorded) in eastern Texas, prompting timber harvesting in the Big Thicket to increase. The same fate befell the great forests of the Congaree and Santee rivers in South Carolina following reports of ivory-bills in the 1970s. Will America commit, finally, to doing the opposite with the spectacularly immense and diverse Big Woods of eastern Arkansas? Only time will tell. Promises are there, but these must be followed by action.

The role of high-profile endangered species is to serve as signals of mistakes we are making in managing our natural resources and as motivators to correct our course. Whether or not the Ivory-billed Woodpecker survives and recovers to grace the towering treetops of our southern forests, we should commit as a nation to managing significant tracts of those forests as if it could. If we succeed in growing back some of these ancient forests—at a scale that is indeed possible in the Big Woods and other places—there does remain a chance that our descendants might marvel, as did John James Audubon, when a Lord God Bird flies overhead.

John W. Fitzpatrick
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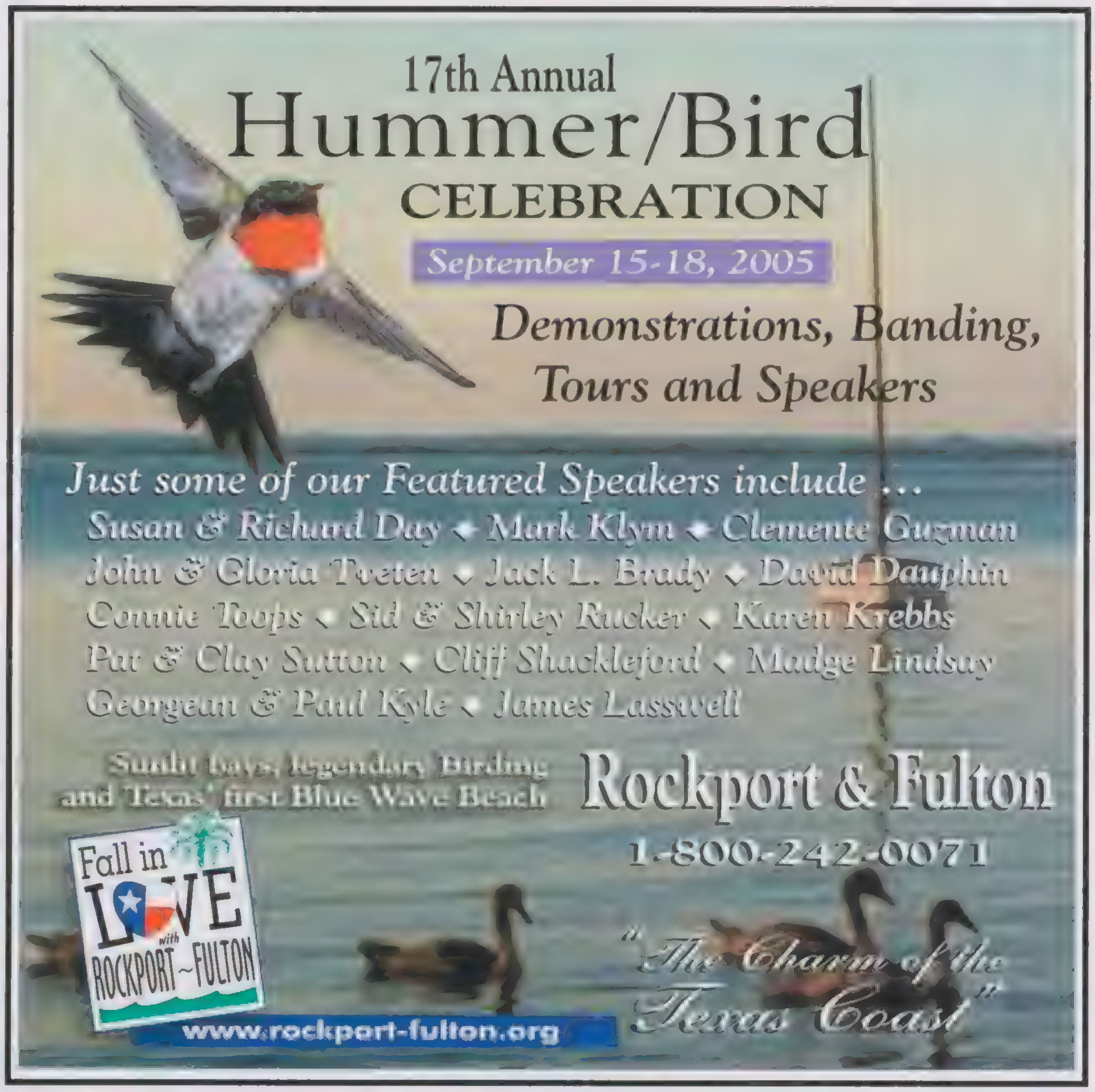

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THE BIRD NEWS HEARD ROUND THE WORLD

BY RACHEL DICKINSON

When researchers from the Cornell Lab of Ornithology announced the rediscovery of the Ivory-billed Woodpecker, few could have predicted the international impact

April 28, 2005; Washington, D. C. — In an auditorium at the Department of the Interior, packed with reporters and representatives from all the major media, Lab of Ornithology director John Fitzpatrick stood up to make an announcement. Behind him sat Secretary of the Interior Gale Norton, Secretary of Agriculture Mike Johann, as well as two senators and several other prominent dignitaries.

"I can't begin to tell you how thrilling it is to say that after 60 years of fading hope, the Ivory-billed Woodpecker lives in the Big Woods of Arkansas," said Fitzpatrick.

ROBERT BARKER/CORNELL UNIVERSITY PHOTOGRAPHY

MARK GODFREY/THE NATURE CONSERVANCY

At a news conference in Washington, D.C., Lab of Ornithology director John Fitzpatrick, at left, announces the historic rediscovery of the Ivory-billed Woodpecker in the Big Woods of eastern Arkansas. The Lab had launched a major search effort fourteen months earlier after a lone bird was sighted in a bayou at the Cache River National Wildlife Refuge (above).

BHL

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MARK GODFREY/THE NATURE CONSERVANCY

The searchers went to extraordinary lengths attempting to document the presence of the Ivory-billed Woodpecker. Above, cinematographer Tim Barksdale sits on a platform in full camouflage with a high-definition television camera.

This stunning pronouncement—that this magnificent bird, for so long believed to be extinct, had been found in rural eastern Arkansas—caught the imaginations of even the most jaded members of the Washington press corps and launched a shock wave of media attention felt around the globe.

"Amazingly, America may have another chance to protect the future of this spectacular bird and the awesome forests in which it lives," said Fitzpatrick.

Scott Simon, director of the Arkansas chapter of The Nature Conservancy, also spoke at the press conference. "It is a landmark rediscovery," he said. "Finding the ivory-bill in Arkansas validates decades of great conservation work and represents an incredible story of hope for the future." Simon had been an early partner in the effort to learn more about the Arkansas ivory-bills and preserve vital habitat to ensure their well-being.

Secretary Norton praised the efforts of the Cornell Lab of Ornithology, The Nature Conservancy, and the other partners and pledged $10 million in federal funds to aid the effort to preserve and restore vital bottomland swamp forest habitat in the Big Woods and to fund more Ivory-billed Woodpecker research.

By the following morning, the rediscovery of the Ivory-billed Woodpecker was front-page news in Britain, Germany, India, Turkey, Australia, and a host of other countries, not to mention the *New York Times*, *Chicago Tribune*, *Washington Post*, and most other major newspapers in this country. But some questions remained: How had the researchers managed to keep this story quiet for 14 months? Why had they kept the rediscovery a secret? And how had we gone from a birder sitting on a fallen log sobbing in February 2004 to a major peer-reviewed article in the journal *Science* and a national press conference to announce the ivory-bill's rediscovery in late April 2005?

The why is easy. At the beginning there was no physical evidence of the bird's existence—only the eyewitness testimony of three people. It would have been premature to announce the rediscovery of a supposedly long-extinct bird without being able to produce tangible evidence that could be measured, analyzed,

TIM GALLAGHER

and assessed. The research team decided early to send teams of searchers into the swamp to look for the bird or birds and to assess the quality of the habitat. At the same time, the Arkansas chapter of The Nature Conservancy stepped up its efforts to bring more land in the area into conservation.

In addition, government agencies needed time to develop contingency plans to deal with issues such as conservation of the area and public visitation plans. The last thing anyone wanted was to have a huge influx of visitors, all eager to see an ivory-bill, without any plans in place for directing them or perhaps limiting access to certain key areas. The core team, which later came to be called the Big Woods Conservation Partnership (including the Cornell Lab of Ornithology, The Nature Conservancy, Oakwood College, University of Arkansas at Little Rock, and other organizations and federal and state agencies) hoped to search at least through late April 2005 before making an announcement.

How they kept the secret is more of a mystery. How can you expect a birder to keep something like this under wraps for more than a year? Most birders like nothing more than to tell all their friends about their latest great bird sighting—and here they had seen the bird of the century and couldn't admit it to anyone outside the search team. The answer is that everyone involved with the search effort

MARK GODFREY/THE NATURE CONSERVANCY

John Fitzpatrick (left), Martjan Lammertink, and David Luneau look on as Russ Charif analyzes sound spectrograms of possible Ivory-billed Woodpecker sounds. Charif and his team from the Lab's Bioacoustics Research Program are examining thousands of hours of recordings from the swamp. Martjan Lammertink of the Netherlands (left) is the world expert on large woodpeckers and has searched for ivory-bills in Cuba and Louisiana. He joined the team as lead biologist in November 2004 and spent the entire field season in the swamps of Arkansas.

Long-time ivory-bill searcher David Luneau (above) sits quietly in his canoe, dressed in camouflage, hoping to catch sight of the elusive woodpecker.

MARK GODFREY/THE NATURE CONSERVANCY (2)

understood the need to keep the story quiet for the good of the bird, and they were largely successful.

How things progressed from Gene Sparling's original sighting to Bobby Harrison crying after seeing an ivory-bill (see "A Bayou with a View," page 20) to the announcement 14 months later is a long, involved, but very interesting story. It began when John Fitzpatrick looked out his office door one morning in early March 2004 and saw *Living Bird* editor Tim Gallagher standing there, wild-eyed, exhausted, and disheveled—like a character from a 19th-century adventure novel who washes ashore with a wild tale of shipwrecks, pirates, and buried treasure. In this case, the treasure was the glimpse he'd had of an Ivory-billed Woodpecker.

After grilling him thoroughly about the sighting he'd had a few days earlier with Harrison, Fitzpatrick concluded there was a strong possibility that Gallagher had indeed seen an ivory-bill. Within days, he sent Gallagher back to the swamp with Cornell graduate student Andy Farnsworth—a top birder and international birding tour leader. Less than two weeks later, the Lab's entire big-day birding team, the Sapsuckers—John Fitzpatrick, Ken Rosenberg, Jeff Wells, Kevin McGowan (and his son, Jay), and Steve Kelling—joined the fray and began a biological inventory of the swamp. This proved to be incredibly grueling work in the swamp, where the water in many places is too low to float a canoe and the mud is too gooey to support your weight if you attempt to walk.

The entire month of March 2004 passed without another sighting, despite the constant presence of searchers in the swamp. But then in early April, as biologists spread out into other areas along the bayou, they were rewarded with a flurry of sightings. At midmorning on April 5, Jim Fitzpatrick (John's brother) spotted an ivory-bill flying above the trees along the opposite shore of a narrow lake. The following day, Ron Rohrbaugh (then Citizen Science director at the Lab) and David Brown (videographer at the Lab's Macaulay Library) spotted a large woodpecker with a white lower back in the same area as Jim Fitzpatrick's sighting. Then on April 10, Mindy LaBranche (of Urban Bird Studies) saw an ivory-bill flying above the trees on the southern edge of the same lake. The next day, Melanie Driscoll (of Bird Population Studies) saw a bird she said was unmistakably an ivory-bill.

Three eyewitnesses: David Luneau (left), Gene Sparling, and Jim Fitzpatrick (brother of Lab director John Fitzpatrick). The videotape shot by Luneau on April 25, 2004, provided the best physical evidence to date of the existence of an ivory-bill in Arkansas and formed the basis of the article in the journal Science. *Below, Lab of Ornithology researcher Ron Rohrbaugh installs an autonomous recording unit (ARU) on a tree in the search area.*

These were exciting developments, but unfortunately no one managed to get a picture or a videotape of the bird, so there was still no tangible evidence. This would all change on April 25, 2004. On that day, David Luneau, a professor of computer science at the University of Arkansas at Little Rock, and his brother-in-law Robert Henderson were canoeing through the bayou, checking on some motion-triggered still cameras that Luneau had set up in various places along the bayou. Luneau had gotten into the habit of always leaving a camcorder running in the canoe as he paddled from place to place. The idea was that if he saw an interesting bird flying past, he could grab the camcorder instantly, point it at the bird, and perhaps capture an identifiable image. As it turned out, when a likely looking bird did flush from the trunk of a tupelo, he didn't have time to pick up his camcorder but, miraculously, it was pointing in the right direction to record the bird.

The videotape Luneau shot was far less than

USING BIOACOUSTICS TECHNOLOGY TO SEARCH FOR A SECRETIVE WOODPECKER

Searching for Ivory-billed Woodpeckers involves countless hours of slogging through swamps or sitting hidden in one place, endlessly waiting for one of the rarest birds in the world to show up. But that's only part of the story of the research going on in Arkansas. In addition to human searchers, the Lab of Ornithology strapped 24 autonomous recording units (ARUs) on trees in the Cache River and White River refuges during this study season.

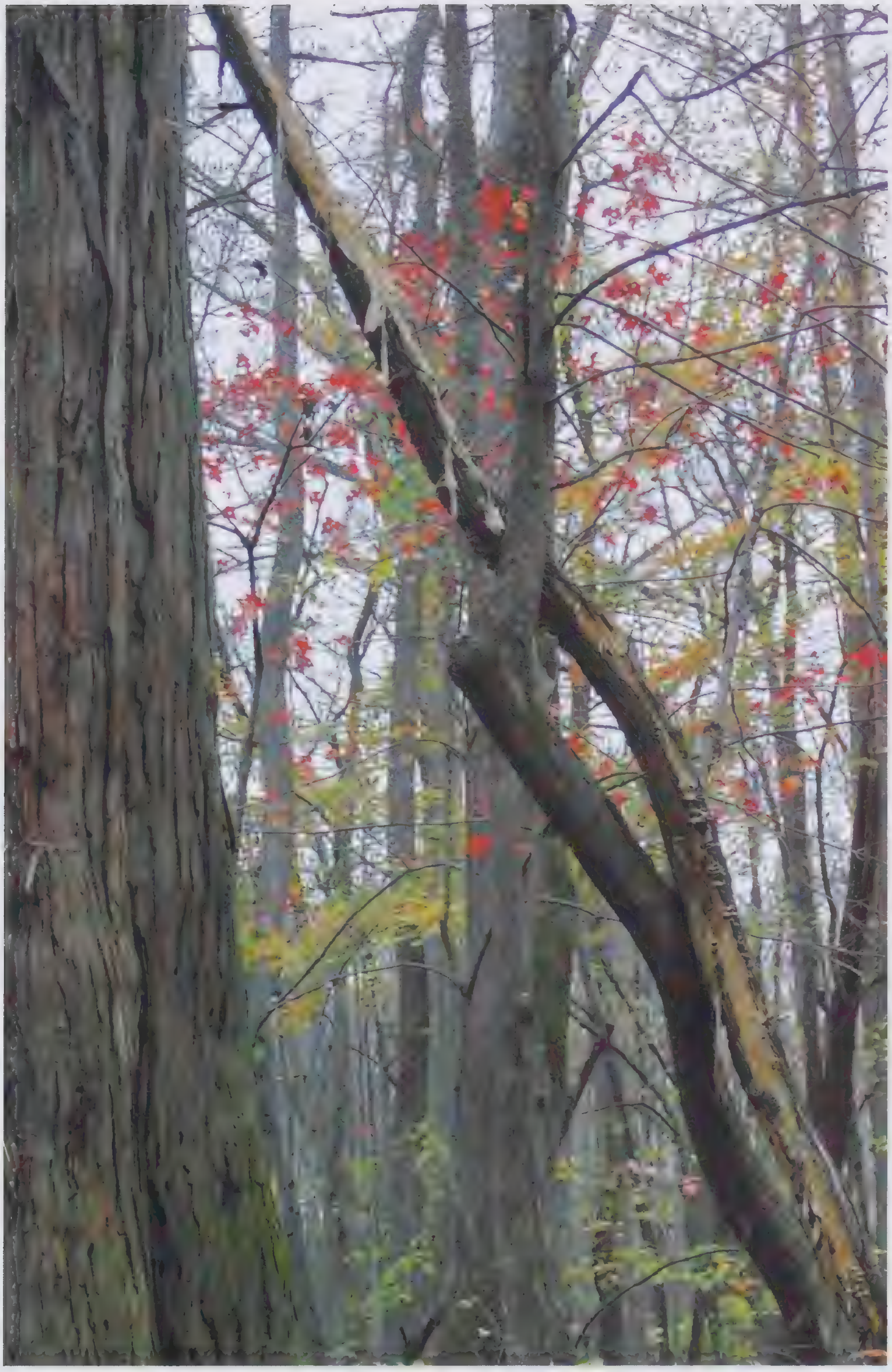
The units can record the distinctive *kent* calls of an ivory-bill from up to 200 meters away and their double-rap display drum from even farther. Designed and built at the Lab, the ARUs consist of a small hard-drive and the circuitry to start and stop recording (each unit records for four hours in the morning and four hours in the late afternoon, when the birds are most active) plus a processor for digital signals, encased in a two-foot-long piece of PVC plumbing pipe. Outside the pipe, a furry windsock covers a 16-microphone array. Each unit is deployed for two to four weeks, then retrieved by field technicians who download the data, replace the batteries, and move it to a new location. The data from the ARU are shipped back to Cornell for analysis. There the fun begins.

A team at the Lab of Ornithology led by Russ Charif must go through the recorded sounds, searching for likely calls or raps. The ARUs recorded about 900 hours of sound per week—that's a whopping 18,000 hours to date. Fortunately, the first part of the process is automated. Two Lab-developed sound visualization and measurement programs, called XBAT and Raven, are used. XBAT rapidly scans the digital recordings, detecting sounds similar to those made by ivory-bills. Raven is used to examine sounds that are of particular interest. On the sound spectrograms, XBAT highlights sounds of interest with colored boxes to catch the eye of the analyst.

MELANIE DRISCOLL

The analyst replays each "detection" repeatedly, sometimes comparing the sound with known recordings of ivory-bills, their relatives, or similar-sounding species. More than 100,000 detections have already been scrutinized. Most have been ruled out, but a few are tantalizingly similar to known ivory-bill calls or to the double-raps of Latin American *Campephilus* woodpeckers. These will be studied in the months ahead.

MARTJAN LAMMERTINK



The upper part of the slanted tree above, in the Cache River refuge, has bark peeled in typical Ivory-billed Woodpecker fashion. The birds use their large, chisel-like bills to pry the bark away and get at the beetle grubs underneath.

optimal—it was in soft focus and somewhat blurred from motion—but most of the key ivory-bill field marks were there: the jet-black body, tail, and wingtips; the brilliant white going all the way to the trailing edge of its secondary and inner primary flight feathers.

Of course, everyone thought this was just the beginning. Soon someone would get the perfect Ivory-billed Woodpecker picture or videotape, and Luneau's video would become a mere footnote. This was not to be. By March 2005, all of the researchers realized that Luneau's video would be the primary physical evidence for the ivory-bill's existence in the Big Woods. Despite thousands of hours spent in the Cache River and White River National Wildlife Refuges by more than 30 searchers, only a handful of additional sightings had taken place. The only other photographic evidence was a video of a possible ivory-bill taken by Bobby Harrison on September 4, 2004, but the view it provided was even briefer than Luneau's and the bird was flying through dense green leaves.

The researchers decided to present Luneau's video as the centerpiece of their evidence that the ivory-bill still exists. But how could they prove one way or another that the bird in the blurry video was the long-sought icon of the southern swamp forest? They began by asking what else this bird could be. They reasoned that it could not be a duck or other waterfowl, because it had been clinging woodpecker-like to the back of a tupelo peeking around at them when they flushed it. The bird was large and was clearly black and white, which would rule out everything but an Ivory-billed or a Pileated woodpecker.

So, why not a pileated? That was the crux of the problem the researchers had to work out. They began by returning to the exact spot where the bird took off and measuring the tree trunk and the distance between the place where the wrist of the bird's wing and its tail had been visible, providing a crucial size measurement. In addition, they performed reenactments of the bird taking off from the trunk, using life-sized, correctly colored models of a Pileated and an Ivory-billed woodpecker, to see if there was any way—by using a slow shutter speed and an out-of-focus lens—to create an image with the pileated model that looked as white in the wings as the bird in the video. In every case, the Pileated Woodpecker model had significantly less white visible and the black trailing edge of its wings showed clearly, whereas in the videos taken of the Ivory-billed Woodpecker model, the image looked virtually identical in color pattern to the bird in Luneau's video.

The researchers also took numerous measurements of Ivory-billed and Pileated woodpecker specimens as well as measurements from photographs of ivory-bills that Arthur Allen took in Louisiana's Singer Tract in 1935. Fortunately, the actual trunk of the tree with the cavity that these birds nested in had been brought back to Cornell by Allen, so they were able to measure

CLOSE ENCOUNTERS WITH AN ELUSIVE BIRD: WHAT THE SEARCH TEAM OBSERVED

Between February 11, 2004, and February 14, 2005, the search team reported at least 15 sightings of the Ivory-billed Woodpecker. Seven of these included sufficient details to include in the article the researchers submitted to *Science* (appearing in the online edition, *Science Express*, April 28, 2005).

February 11, 2004: While kayaking through the Cache River National Wildlife Refuge in Arkansas in the early afternoon, Gene Sparling of Hot Springs, Arkansas, saw a huge and unusually marked woodpecker with a red crest fly toward him and land on a nearby tree. Sparling noticed several field marks suggesting that the bird was an Ivory-billed Woodpecker.

Six days later, Tim Gallagher, editor of *Living Bird*, and Bobby Harrison, associate professor at Oakwood College in Huntsville, Alabama, interviewed Sparling about his sighting. The two had been following up on possible Ivory-billed Woodpecker sightings across the South. Sparling's description was so convincing that Gallagher and Harrison traveled to Arkansas the following week and joined Sparling on a week-long float trip through the bayou where he had seen the bird.

February 27, 2004: "On the second day of our trip, at approximately 1:15 in the afternoon," Gallagher recalled, "a large black-and-white woodpecker with the characteristic color pattern of an Ivory-billed Woodpecker flew across the bayou at close range in front of Bobby and me. We cried out, 'Ivory-bill!' and paddled frantically toward shore. Although the bird landed on tree trunks briefly a couple of times, we weren't able to catch up with it or shoot a video."

April 5, 2004: Jim Fitzpatrick, brother of Lab of Ornithology director John Fitzpatrick and executive director of the Carpenter St. Croix Valley Nature Center in Minnesota, saw an Ivory-billed Woodpecker flying above the treetops along the edge of a lake near the initial sighting area. With the bird only 100 meters away, he was able to see the broad white trailing edges of the wings characteristic of an ivory-bill.

April 10, 2004: At the same location as the April 5 sighting, Melinda LaBranche of the Lab of Ornithology watched as an ivory-bill flew above the treetops 100 meters away. Through binoculars, she noticed the broad white trailing edges of the wings and a narrow area of red on the bird's crest.

April 11, 2004: Melanie Driscoll of the Lab of Ornithology watched an ivory-bill fly across a gap in the forest about 120 meters away. Through binoculars she saw the broad white trailing edges of the wings, top and bottom, and a white line extending from the wings up the long neck.

TIM GALLAGHER

Longtime ivory-bill searcher Bobby Harrison (above) floats through the bayou in his camouflaged canoe, scanning the trees for signs of woodpecker foraging or roost cavities. He was among the first three people who sighted the bird in February 2004.

June 9, 2004: Bobby Harrison reported seeing an Ivory-billed Woodpecker flush from near the base of a bald-cypress about 15 meters in front of him. As the bird swooped up to land, the broad white trailing edges of the wings were clearly visible.

February 14, 2005: Casey Taylor of the Cornell Lab of Ornithology reported hearing a series of double-knock display drums (the characteristic drumming pattern of most *Campephilus* woodpeckers) for 30 minutes. A short time later she watched through binoculars as an Ivory-billed Woodpecker flew across an open area as it was being mobbed by American Crows. As the bird flew past about 80 to 120 meters away, she noticed through binoculars the broad white trailing edges to the wings, long neck with white stripe, and black head with long bill.

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from the actual tree and determine the exact size of the living ivory-bills in the Allen photographs. The bird in Luneau's video is significantly larger than a Pileated Woodpecker—in fact, it is in the upper range for an ivory-bill, which effectively eliminates the possibility that the bird is anything but an Ivory-billed Woodpecker.

The analysis of David Luneau's video and seven of the best-documented sightings form the basis for the article written by John Fitzpatrick and the other primary researchers in the Big Woods Partnership that was recently published in the peer-reviewed journal, *Science*, published by the American Association for the Advancement of Science.

What does the future hold for the bird, the habitat, and the researchers studying there? For the latter, a lot more work. So far, the search team has focused its efforts in approximately 16 of the 850 square miles in the bottomland forests of Arkansas. Fitzpatrick said the next step will be to broaden the search to assess whether breeding pairs exist and how many ivory-bills the region may support. To expand the area being monitored and minimize disturbance to the endangered woodpecker, the team will continue to use acoustic monitoring (see sidebar on page 13) as well as on-the-ground searching. Fitzpatrick said the team will also encourage others to search for the ivory-bill elsewhere in suitable habitats throughout the South.

Simon of The Nature Conservancy said that over the years, state and federal agencies, conservation organizations, hunters, and landowners have aggressively worked to conserve and restore the bottomland hardwood and swamp ecosystem. "Now we know we must work even harder to conserve this critical habitat—not just for the Ivory-billed Woodpecker, but for the black bears, waterfowl, and many other species in these unique woods," he added.

The partnership's 10-year goal is to restore 200,000 more acres of forest in the Big Woods. The effort will include conserving forest habitat, improving river water quality, and restoring the physical structure of the river channels, focusing on locations with maximum benefit in reconnecting forest patches and protecting river health.

"The ivory-bill tells us that we could actually bring this system back to a near-primeval state here in the heartland of North America," said Fitzpatrick. "That's the kind of forest that I hope some generation of Americans and citizens of the world will get to come and visit." ■

Rachel Dickinson is a freelance writer based in Freeville, New York.

MARK GODFREY/THE NATURE CONSERVANCY

The rediscovery of the ivory-bill in Arkansas has galvanized efforts to save the rich swamp forest habitat in the Big Woods region.

BIRDING JOURNAL #157

"It's no wonder they named a magician after this bird."

I've watched Merlins on three continents, so I know that these snappy little falcons are often elusive. But the subspecies in our Pacific Northwest, the so-called "Black Merlin," is the undisputed master of the disappearing act. Over the last few days I must have walked 30 miles through coastal forests in pursuit of this bird. Fortunately, my 8x42 Premier LX$_{LS}$ are so lightweight I don't even notice I'm carrying them — until it's time to lock in on the bird. Then even a magician like Merlin couldn't escape the brilliance of their superb optics.

"Black" Merlin
(Falco columbarius suckleyi)

Coastal British Columbia
March 7, 2005

Kenn Kaufman is a legend among birders. He is a regular contributor to several publications and the author of numerous books, including Kaufman Field Guides.

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A BAYOU WITH A VIEW

Tim Gallagher pulls his canoe through a shallow area of the bayou, searching for an Ivory-billed Woodpecker. He and his colleague Bobby Harrison had been following up on seemingly credible sightings of the species across the South.

BOBBY HARRISON

BY TIM GALLAGHER

Searching for a ghost in the swamps of Arkansas

You never know when you get up in the morning what earth-shaking event might take place and change your life forever. For me, a chain of life-altering events began when I checked my email one day in February 2004. Just a few days earlier a kayaker named Gene Sparling had been taking a week-long float trip down a long, narrow bayou in eastern Arkansas when he spotted an unusual woodpecker foraging on the trunk of a cypress tree. Inconspicuous in his kayak, he pulled into a secluded spot out of the current and sat watching the bird. He knew immediately when he saw the bird's unusual color pattern—brilliant white on the lower half of its back, with two white lines extending up the back to its crested head—that this was a bird he had never seen before. It was so close he could see the minute details of the feathers and even some staining on the white feathers of its lower back, perhaps from going in and out of a roost hole or nest.

When he got home a few days later, Gene posted a report about his float trip on a canoe club list-serve and included a couple of sentences about the bird. Mary Scott, a birder who'd had a credible ivory-bill sighting in Arkansas a year earlier, sent his report to me. I called him, and we spoke for about an hour. His sighting sounded better than a lot of the decades-old reports I'd been investigating, and it was less than a week old.

Gene has Pileated Woodpeckers nesting on his farm in Hot Springs, Arkansas, in the western part of the state, so he is thoroughly familiar with this species. It seemed unlikely that this was what he had seen. What struck me most about his description was the way he said the bird seemed almost cartoonlike because of its quick, jerky movements and general nervousness. Its neck looked thinner than a pileated's, and its crest seemed to come to a point in the back.

I telephoned my friend Bobby Harrison—a professor at Alabama's Oakwood College who had been searching for ivory-bills with me for a couple of years—and told him about the sighting. Then I asked if he'd mind talking with Gene. I was interested in getting his impression of Gene to see if it was the same as mine.

After a long talk with Gene, Bobby told him, "It sounds to me like you've seen an Ivory-billed Woodpecker."

Before they got off the phone, Bobby was already planning a trip to the sighting area (about a five-hour drive from Bobby's home near Huntsville, Alabama), and Gene was going with him. I mentioned this to my wife about an hour later, and she told me, "You should go along with him. You'll never forgive yourself if he sees an ivory-bill and you're not there."

I didn't need much encouragement. I did a quick search on the Internet to find a good airline ticket price and then called up Bobby.

"Say, you think you could pick me up in Memphis on the way down?"

"No problem," he said. "I go right through there."

And that was it: the start of our adventure. A week later, I was on my way south again, for the second time in a month.

BHL

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TIM GALLAGHER

Bobby Harrison (left) and Gene Sparling paddle down Bayou de View on the morning of February 27, 2004. Who could have known that a few hours later, Harrison and the author would have an unmistakable, close-up sighting of an ivory-bill?

It was bad when Bobby and I first started canoeing down Bayou de View—real bad. Without any preparation, we clambered down below the overpass, loaded up the canoe—which Gene had borrowed for us from his parents—and pushed off into the latte-brown river flowing into the swamp. I sat in front and Bobby in the stern, with all of our equipment piled high between us. I'd had some fairly recent experience canoeing in the Adirondacks with my kids, and I had floated to falcon nests in Canada and other far-northern places in the past, but I was rusty. Bobby hadn't touched a canoe since he was 12—and it showed. It was a real grind hauling ourselves through that morass, at times practically clawing our way down the bayou, scrambling up and over logs and cypress knees or blasting through little chutes where the water pushed together to form a swift-moving stretch. This is where you're in danger of flipping over. You bump into a submerged log or root, then overreact to compensate, and there you go, your canoe has flipped over and all your gear and supplies are bobbing downstream as you lie submerged with brown swamp water rushing into your mouth. Blech!

On that first day, it seemed like whenever we found ourselves rushing headlong into a treacherous area, Bobby and I couldn't seem to coordinate our movements to avoid the hazards. I'd point the canoe toward the one open passage I could see ahead, but Bobby would inevitably steer the stern in the other direction, and we'd wind up blasting sideways into the teeth of disaster. It was the wildest roller coaster ride I've ever been on. Somehow we managed not to swamp the canoe, but a couple of times I jumped overboard and had to horse the canoe in a different direction. Luckily I was wearing chest-waders. Unluckily, sometimes the water was deeper than the top of my waders, and the water came flooding inside.

Bayou de View is a magical place, where wildlife abounds. As we canoed through the endless swamp, Wood Ducks and flocks of Mallards would burst from the water around us. Herds of white-tailed deer, snorting a loud warning, would splash off across the shallow areas at the edge of the woods. We saw beavers swim past. We saw otters at play. The loud calls of Barred Owls and Great Horned Owls echoed through the dimly lit recesses of the swamp, even at midday. But most impressive were the woodpeckers. Everywhere we turned, we saw Pileated, Red-bellied, Red-headed, and Downy woodpeckers, plus a few Yellow-bellied Sapsuckers. It excited us to remember Jim Tanner's words about how the woods in Louisiana's Singer Tract—where he had studied ivory-bills as a Cornell graduate student in the late 1930s (see "A Forest Alive," page 36)—had the most woodpeckers he'd ever seen. This bayou had the same feel. Although on the first day we hadn't seen any of the huge trees that Gene had described, we had passed some large cypress stumps, remnants of the logging done in the 1800s. And it seemed like there were trees in every state of decomposition, ranging from those with just a few dying limbs to those that had already tumbled to the swamp floor and were rotting away to nothing. It was perfect for woodpeckers, with lots of food and dead trunks and limbs in which to forage and dig roost and nest holes.

It was great waking up in the swamp the next morning. Bobby made his classic swamp breakfast—Dinty Moore stew in special waterproof packages that you could boil. He would put three or four of them at a time into a bubbling cauldron of brown swamp water, completely unfit for human consumption, reasoning that the water couldn't get through to the stew. Of course, you'd never know if it did, because the stew is about the same color as the water. Gene said that the last time he was here, he'd run short of drinking water and had pulled out his special survival water purification straw. It had clogged up after a few quick slurps.

On the second day of our trip down the bayou, we passed an area where a long-abandoned railroad trestle—probably built shortly after the Civil War—cut through the trees. The rails and even the connecting rail bed were long gone, leaving only the stout wooden posts rising up from the swamp water. We were starting to feel like we were really out in the wilderness, far from civilization. We'd been clawing our way along all morning, and it was tough. Bobby and I tried our best to keep up with Gene, but his kayak was much lighter and more maneuverable than our canoe. He could slip easily through places that presented impossible barriers to Bobby and me: cypress knees, log jams, tangles of brush and debris. We often had to back up a long way and try a different route, fighting the current back upstream and weaving our way around obstacles.

It was an amazing experience spending time with Gene. He's a remarkable outdoorsman and has spent his entire life doing things like this: going out for days or weeks at a time hiking, backpacking, horse-packing, or kayaking in areas as close to wilderness as he could find. He used to lead kayak tours in Baja California, paddling out among the gray whales. He now owns a farm with a lot of acreage in the mountains near Hot Springs, Arkansas, and leads horseback tours. Grizzled and bearded with receding red hair and crow's feet etched deeply into his weathered face, he looks older than his 48 years. He has a deep, resonant voice and a slow delivery. He's at his best threading his way silently through the bayou. I'll never forget watching him moving stealthily in his kayak. He would always range 100 feet or more in front of us, pulling into little hiding places and sitting silently—watching, waiting for something to happen. Gene's patience was boundless, and he had such a low profile in the kayak, he didn't look human. If anything, animals seemed curious when they saw him. We'd come along behind him in our canoe and watch Wood Ducks, beavers, and otters flush from just a few yards in front of him. I had a feeling he'd much rather be out there alone, but he so wanted someone to confirm his sighting, he put up with us.

Just as we were thinking what a wild place Bayou de View is, we started to hear the roar of highway traffic less than a mile downstream. As we approached the bridge where the road crossed the bayou, the din of trucks was almost unbearable. Bobby told me that whenever he had looked down on canoeists like this while he was driving past on a highway, he always envied the people. He wished he could be down there instead of driving. And now here he was, one of the lucky canoe people. The only problem was that it was now a good hour past noon, and he hadn't eaten so much as a Snickers bar since breakfast.

"Man, we gotta stop soon," said Bobby. "I'm starving to death." Looking around, I couldn't see any dry spots. The woods up and down the bayou in this area were inundated with water. Gene said he remembered some places downstream, a little past the highway, where we could stop for lunch. I said that was fine with me. Bobby didn't seem too happy, but we continued on.

We paddled the length of the narrow lake south of the highway and then turned right into a narrower channel leading through the trees. Gene had gone well ahead of us and was going to wait for us there. He said if it seemed like we might get lost, he'd come back and find us.

As we paddled through the bayou, we talked and joked about floating through the trackless swamp. Then Bobby started to grouse that we were being way too noisy to see any ivory-bills.

"We don't need to worry about that," I said. "The road's so loud, they'll never hear us coming. And who knows, maybe Gene'll chase one back to us."

And then it happened. Less than 70 feet away, a large black-and-white bird that had been flying up an offshoot of the bayou to the right came out into the sunshine and flew across the open stretch of water right in front of us. It started to bank, giving us a superb view of its back and both wings for a moment as it pulled up like it was going to land on a tree trunk. "Look at all the white on its wings," I yelled. Hearing my voice, it veered away from the tree and continued to fly to the left. We both cried out simultaneously, "Ivory-bill!"

Bobby reached for his camcorder while I tried to keep track of the bird. I kept pointing as it flew. I'm sure it landed on a tree trunk about 50 feet away because I lost it for about three seconds, then I had it again, moving in a straight line through the woods, going up the bayou for another 50 or 60 feet, then landing again. It must have hitched around the trunk each time, because I couldn't see it. When we were almost to shore, I caught another glimpse of it flying at the same altitude in the middle of the woods. I lost it after about 10 feet.

We clambered ashore, dragging the canoe onto the mud, and took off after the ivory-bill, our camcorders running. We staggered through boot-sucking muck and mire, over fallen trees and through tangled roots and branches. It was impossible to move quietly. We didn't see anything.

We walked back to the canoe about 15 minutes later, just as Gene was paddling to shore, looking for us. I glanced at my watch. It was 1:30 on February 27, 2004. I said to Bobby that we should sit down separately right away and jot down our field notes, before we had a chance to talk and influence each other. At least we'd have some kind of documentary evidence, even if we couldn't get a photograph.

My first impressions of the bird were that it was definitely a woodpecker and looked larger than a crow. I know it had white on the trailing edge of the wing, because that's what I honed in on when I mentally evaluated the bird. The white was much whiter than I thought it would be and the black much blacker—coal black, beautiful. I didn't notice any red on the bird, and I did not have a distinct impression of the bill, because my total focus had been first on the wing pattern and then on keeping track of the bird. This is a bird that no knowledgeable person could have misidentified. It was definitely not a Pileated Woodpecker. It looked completely different. And we'd been seeing dozens of pileateds and pointing them out right and left, commenting on their field marks and other characteristics, constantly asking ourselves whether we could ever possibly mistake this bird for an ivory-bill. No way. This was a different animal.

A short time after he finished writing up his field notes, Bobby sat down on a fallen log in the swamp and started sobbing. "I saw an ivory-bill," he said. "I saw an ivory-bill." Gene and I looked away, too choked with emotion to speak. I saved my tears for a few days later as I was driving home from the airport. ■

From left to right, Gene Sparling, Bobby Harrison, and Tim Gallagher on the day that Harrison and Gallagher saw the ivory-bill. Sparling had seen the bird two weeks earlier. Their sightings launched the largest search ever mounted to find a rare bird.

TIM GALLAGHER

"A Bayou with a View" is an excerpt from Tim Gallagher's latest book, The Grail Bird *(Houghton Mifflin, 2005), which chronicles his search for the Ivory-billed Woodpecker and the bird's recent rediscovery in eastern Arkansas.*

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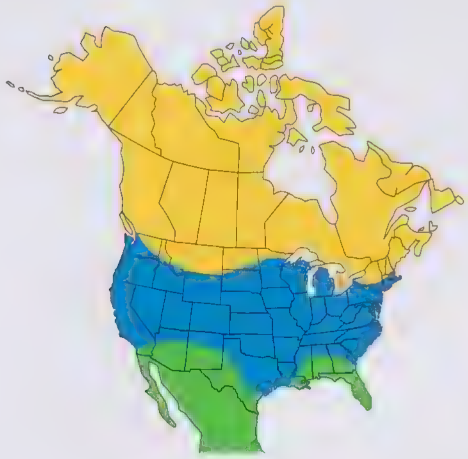

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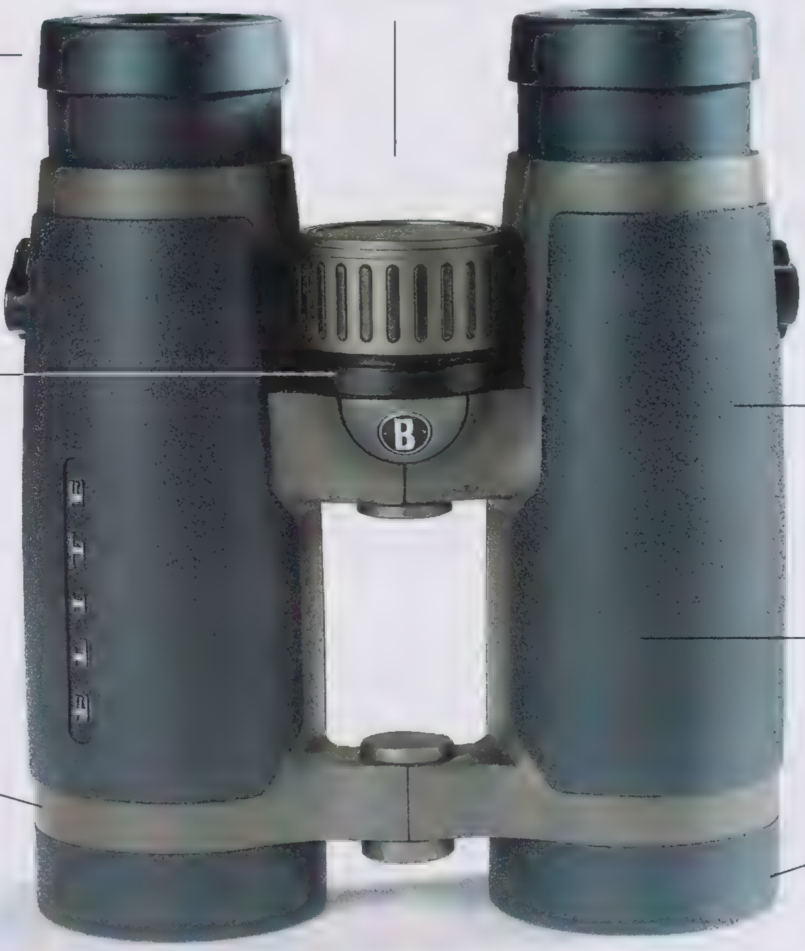
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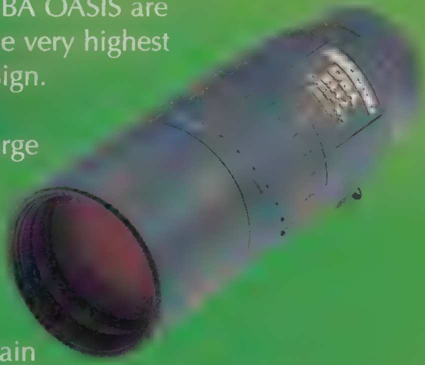

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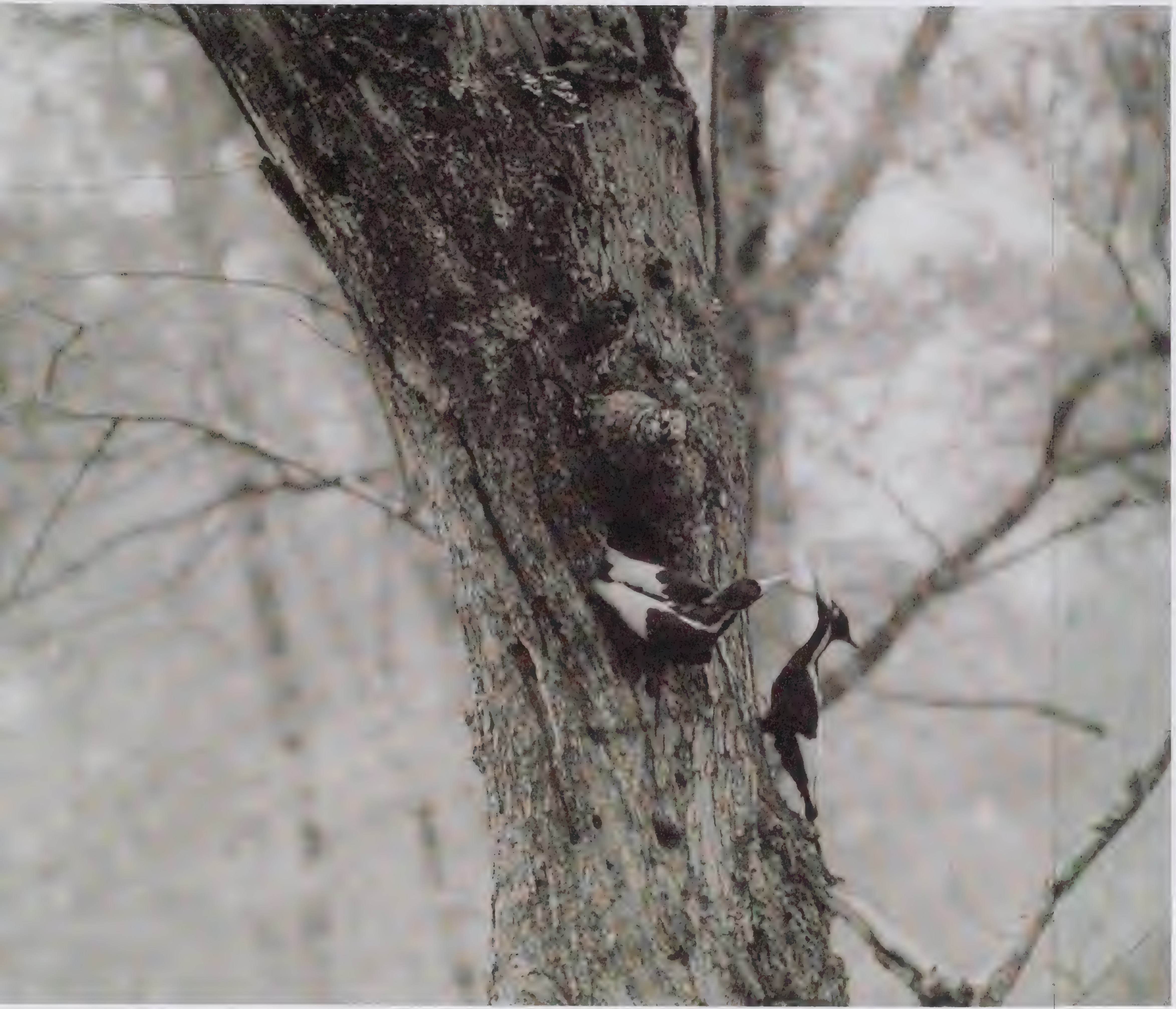

A male (left) and a female Ivory-billed Woodpecker exchange incubation duties at a nest in the famed Singer Tract—what was then an 80,000-acre remnant of primeval swamp forest in northeastern Louisiana. Arthur A. Allen (at right) led a Cornell expedition there in 1935 and produced the first motion pictures and sound recordings of this critically rare species.

ARTHUR ALLEN'S IVORY-BILLS

A portfolio of images by the Cornell Lab of Ornithology's esteemed founder

It amazes me to think how long the Cornell Lab of Ornithology has been involved in studying the Ivory-billed Woodpecker. Pioneering ornithologist Arthur A. Allen, who founded the Lab, located his first pair of ivory-bills in 1924 in a Florida cypress swamp. Even at that early date, many scientists already believed the species was extinct. Allen went on to study and photograph the ivory-bill at Louisiana's Singer Tract in 1935. We are pleased to present a portfolio of his historic images on these pages.—*Tim Gallagher*

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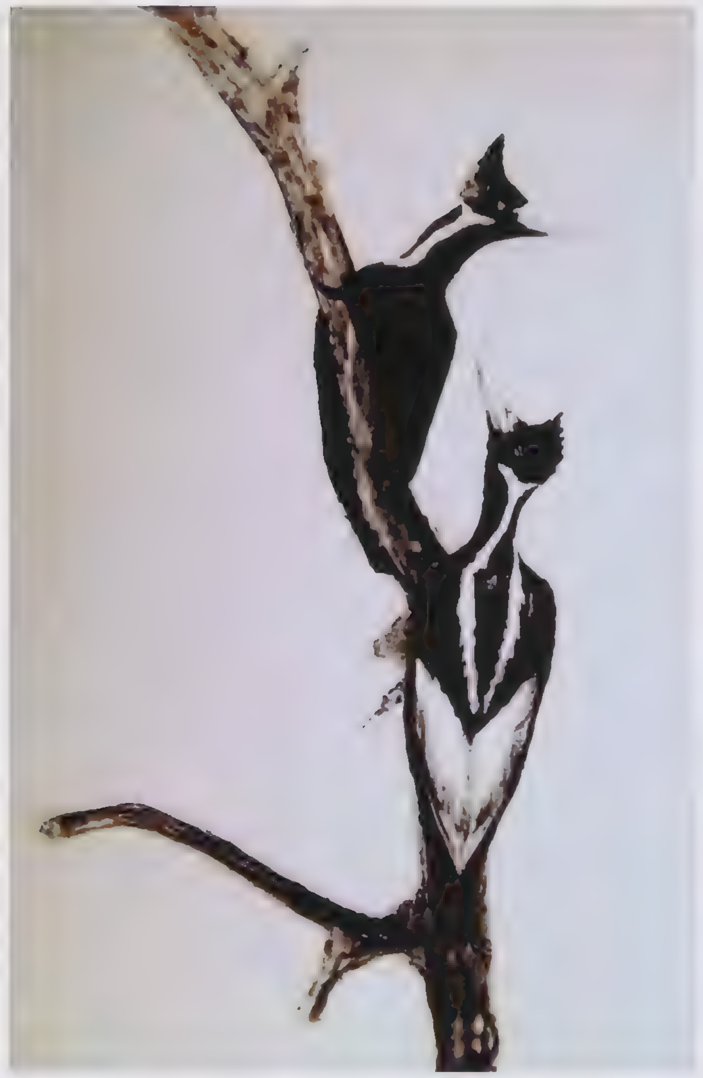
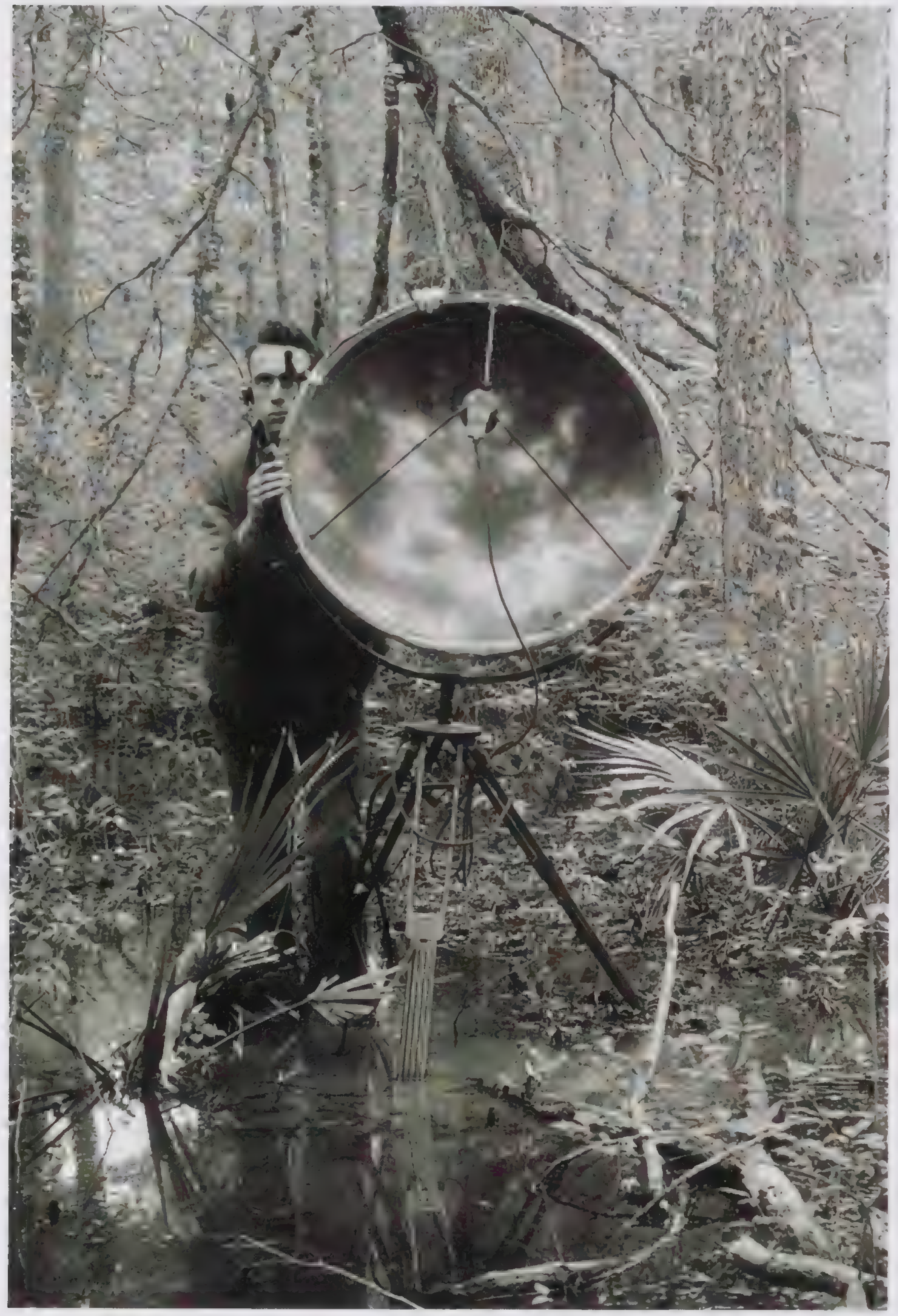
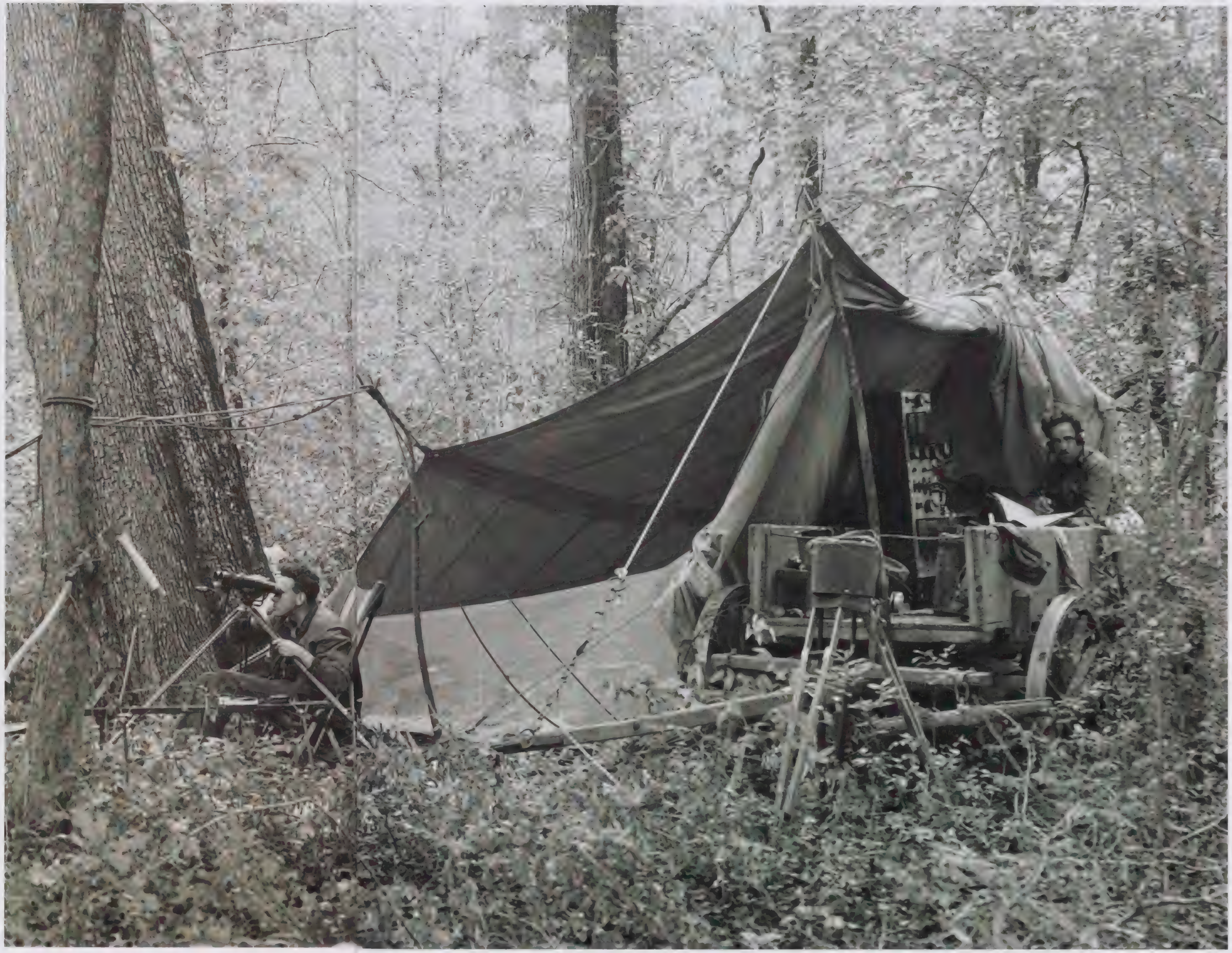


In 1924, Arthur Allen (above) and his wife Elsa traveled to Florida to search for Ivory-billed Woodpeckers. They explored a cypress swamp with local guide Morgan Tindle (at left, holding an alligator). After a lengthy search, they located a pair and took the first picture of living ivory-bills (above left). This picture was retouched by Allen and looks almost like a sketch.

Allen later wrote: "I have just enjoyed one of the greatest experiences of my life, for I have found that which they said could not be found—the Ivory-billed Woodpecker. Once a fairly common bird in many parts of Florida, it is supposed to have followed the Carolina Parakeet into extinction. Those who know most about Florida birds held out little hope of my ever seeing one alive, but after a month's search I have found a pair of them, and they are very much alive. They are so very much alive that it has been only with the greatest difficulty that we have located where they roost in the cypress swamp and where they feed in the great pinewoods. It is good to know that they are not yet entirely extinct, and it is a great satisfaction to accomplish one's quest." To Arthur Allen's great chagrin, a pair of local taxidermists who heard about the birds went out and shot them—legally.

James T. Tanner (below) aims a specially designed parabolic microphone at a pair of ivory-bills in the Singer Tract. Although these devices are now in common use for recording bird sounds—allowing recordists to focus on a single sound source while minimizing background noise—in 1935 they were high-tech experimental equipment. A Cornell grad student at the time, Tanner went on to study the Singer Tract ivory-bills from 1937 to 1939 while completing his doctoral degree.





The Cornell researchers camped near an ivory-bill nest in April 1935, recording the comings and goings of the birds from dawn to dusk for several days. Above, James Tanner (left) observes an ivory-bill through 24x binoculars while Peter Paul Kellogg records the distinctive calls of the bird. Kellogg was one of the great pioneers in the field of sound recording.

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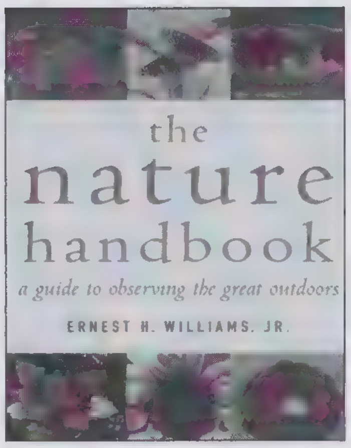


Nature is full of fascinating stories, that attract our attention at a young age and keep us amazed throughout our entire lives. The need to understand nature draws us back to its simple beauty again and again, yet underneath this simplicity lies a complex web of associations and patterns.

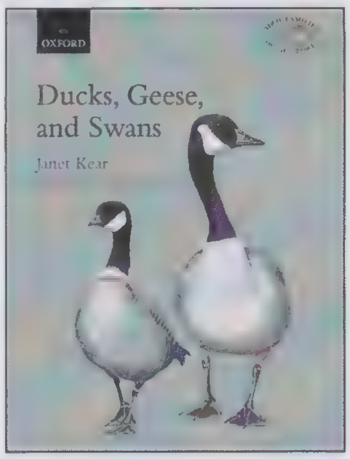
All naturalists–from birders to gardeners, hikers to environmentalists, wildflower enthusiasts to butterfliers–will appreciate the different approach of the *Handbook*–even those whose interest in the natural world is just beginning to develop. *The Nature Handbook* does what no other field guide does: it explores and explains nature through these connecting patterns, revealing them to the many different types of nature lovers.

2005 288 pp.; 505 color halftones, 4 line illus.
0-19-517929-3 cloth ~~$65.00~~/$52.00
0-19-517194-2 paper ~~$26.00~~/$20.80

DUCKS, GEESE, AND SWANS

Anseriformes

Janet Kear, *The Wildfowl and Wetlands Trust*



Ducks, Geese and Swans provides an overview of the family, their taxonomy and evolution, feeding ecology, breeding strategies, social behavior, movements and migrations, population dynamics, and conservation and management. The book gives detailed accounts of 165 species, describes each bird in its natural state, and summarizes the published literature and recent research. Complementing the accounts are thirty specially commissioned color plates by Mark Hulme, along with numerous black and white drawings illustrating behaviors, plus distribution maps for each species.

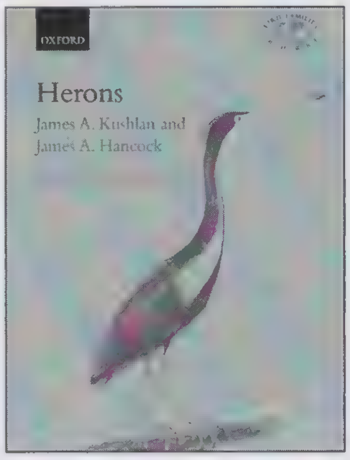
(Bird Families of the World Series #16)

April 2005 832 pp.; 32 color plates, 200 maps, 70 line illus.
0-19-854645-9 ~~$274.50~~/$219.60

THE HERONS

Ardeidae

James A. Kushlan and the late **James Hancock**



Herons and their close relatives, the egrets and bitterns, comprise sixty species in total and are found all over the world except in polar regions, and are a strikingly beautiful part of the wetlands they inhabit. They are particularly abundant and popular in the South West, especially Florida. Herons are a diverse group, easily recognized by their long legs, necks and bills. Many species are notable for their sociality as they feed, roost, and nest together in single or mixed species assemblages. The authors have extensive experience of research and observation of these birds and this book provides an up to date comprehensive review of the herons of the world. Covering their biology, distribution, description, systematics, breeding, feeding, and conservation, James Hancock and James Kushlan have distilled their lifetimes' research on the heron into one volume. This volume is complemented by beautiful color paintings especially painted for the book, color photographs, and distribution maps.

(Bird Families of the World Series #14)

January 2005 460 pp.; 65 maps, 12 color plates, 86 b/w halftones
0-19-854981-4 ~~$174.50~~/$139.60

CUCKOOS

Cuculidae

Robert B. Payne, *University of Michigan*

OXFORD
The Cuckoos

The cuckoos are the most variable birds in social behavior and parental care: a few cuckoos are among the most social of all birds and rear their young in a common nest; most cuckoos are caring parents that rear their own young with some females laying a few eggs in the nests of others; while many cuckoo species are brood parasites who leave their eggs in the nests of other birds to rear, with their young maturing to kill their foster nestmates. In *The Cuckoos*, Robert B. Payne presents a new evolutionary history of the family based on molecular genetics, and uses the family tree to explore the origins and diversity of their behavior. He traces details of the cuckoos' biology to their original sources, includes descriptions of previously unpublished field observations, and reveals new comparisons of songs showing previously overlooked cuckoo species. Lavishly illustrated with specially commissioned color plates and numerous maps, halftones, and line drawings, *The Cuckoos* provides the most comprehensive and up-to-date account of this family yet available.

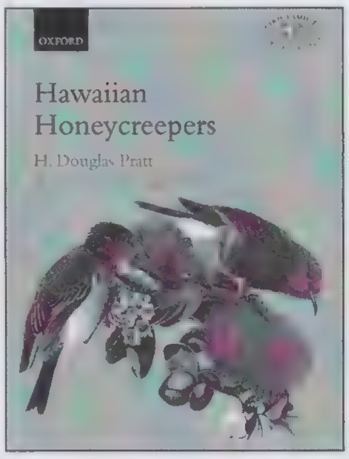
(Bird Families of the World Series #15)

July 2005 500 pp.; color plates, halftones, maps & line illus.
0-19-850213-3 ~~$174.50~~/$139.60

THE HAWAIIAN HONEYCREEPERS

Bird Families of the World

H. D. Pratt, *Lousiana State University Museum*



The Hawaiian Honeycreepers are typified by nectar feeding, as well as their bright coloration and canary-like songs. They are considered one of the finest examples of adaptive radiation, even more diverse than Darwin's Galapagos finches, as a wide array of different species have evolved in all the different niches provided by the Hawaiian archipelago. This book will therefore be of interest to evolutionary biologists and ecologists as well as professional ornithologists and amateur bird watchers. As with the other books in the *Bird Family of the World Series*, this work is divided into two main sections. Part one is an overview of the Hawaiian Honeycreeper evolution and natural history and Part two comprises accounts of each species. The author has produced his own outstanding illustrations of these birds to accompany his text.

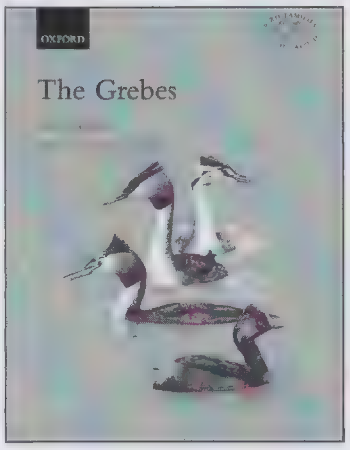
(Bird Families of the World Series #13)

June 2005 336 pp.; 130 b/w halftones, 9 color plates & 20 line illus.
0-19-854653-X ~~$179.50~~/$143.60

GREBES

Podicipedidae

Jon Fjeldsóa, *University of Copenhagen*



Those who are unfamiliar with grebes tend to think of them as odd ducks, but their strange behaviors reveal them to be fascinating and intriguing birds. Grebes are unusual and unique in many ways: their habit of feather-eating; their method of sunbathing; their special method of underwater propulsion; the unusual structure of their feet; their courtship behavior; and their floating nests.

In *Grebes*, Fjeldsa provides a comprehensive and up-to-date account of their origin and evolution, biology, and how they have adapted to exploit their environment, beautifully illustrated with maps, line figures, and his own stunning full-color paintings.

(Bird Families of the World Series #12)

January 2005 266 pp.; 31 maps, 8 color plates, 116 line illus.
0-19-850064-5 ~~$179.50~~/$143.60

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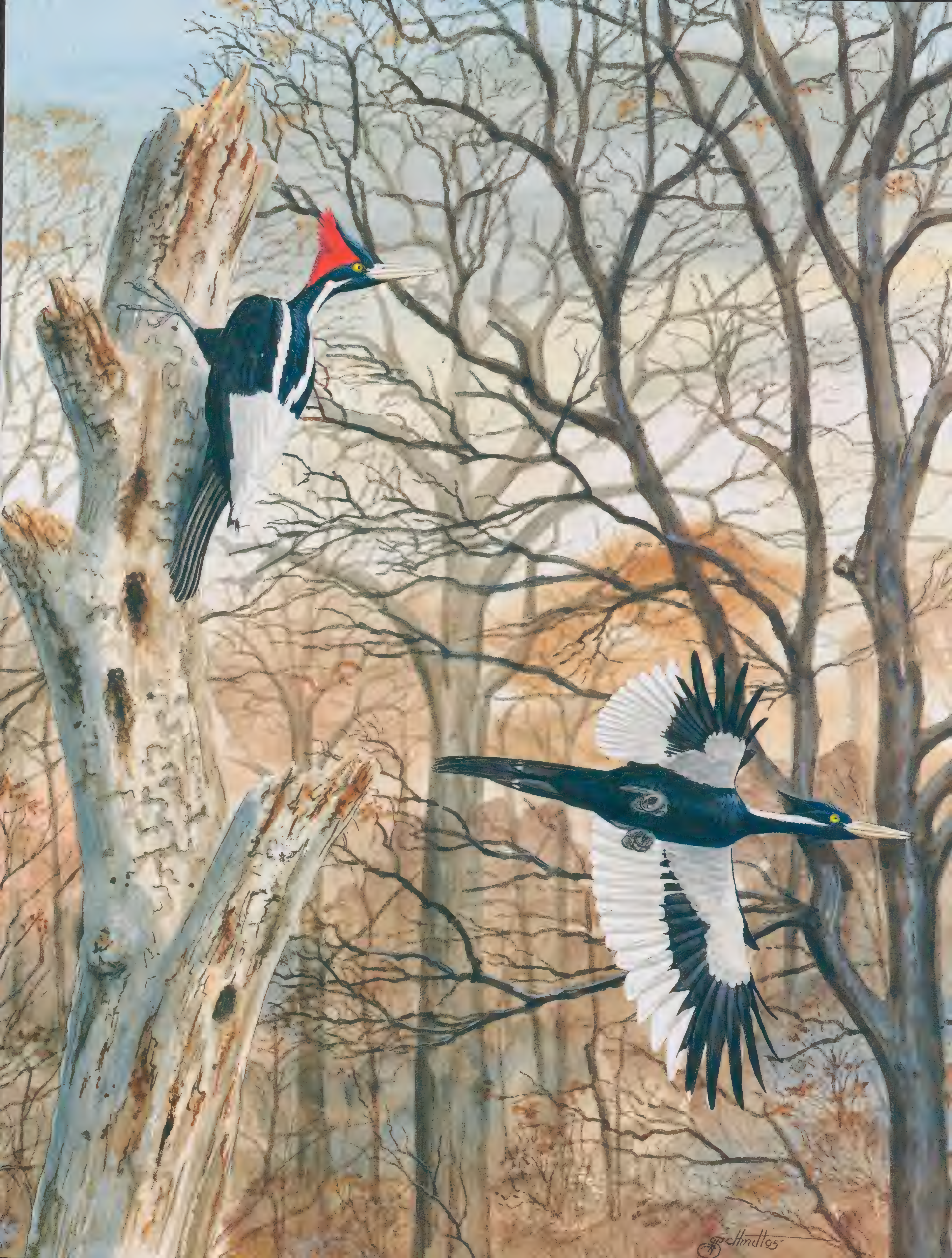

Schmitt 05

A FOREST ALIVE

BY JAMES T. TANNER

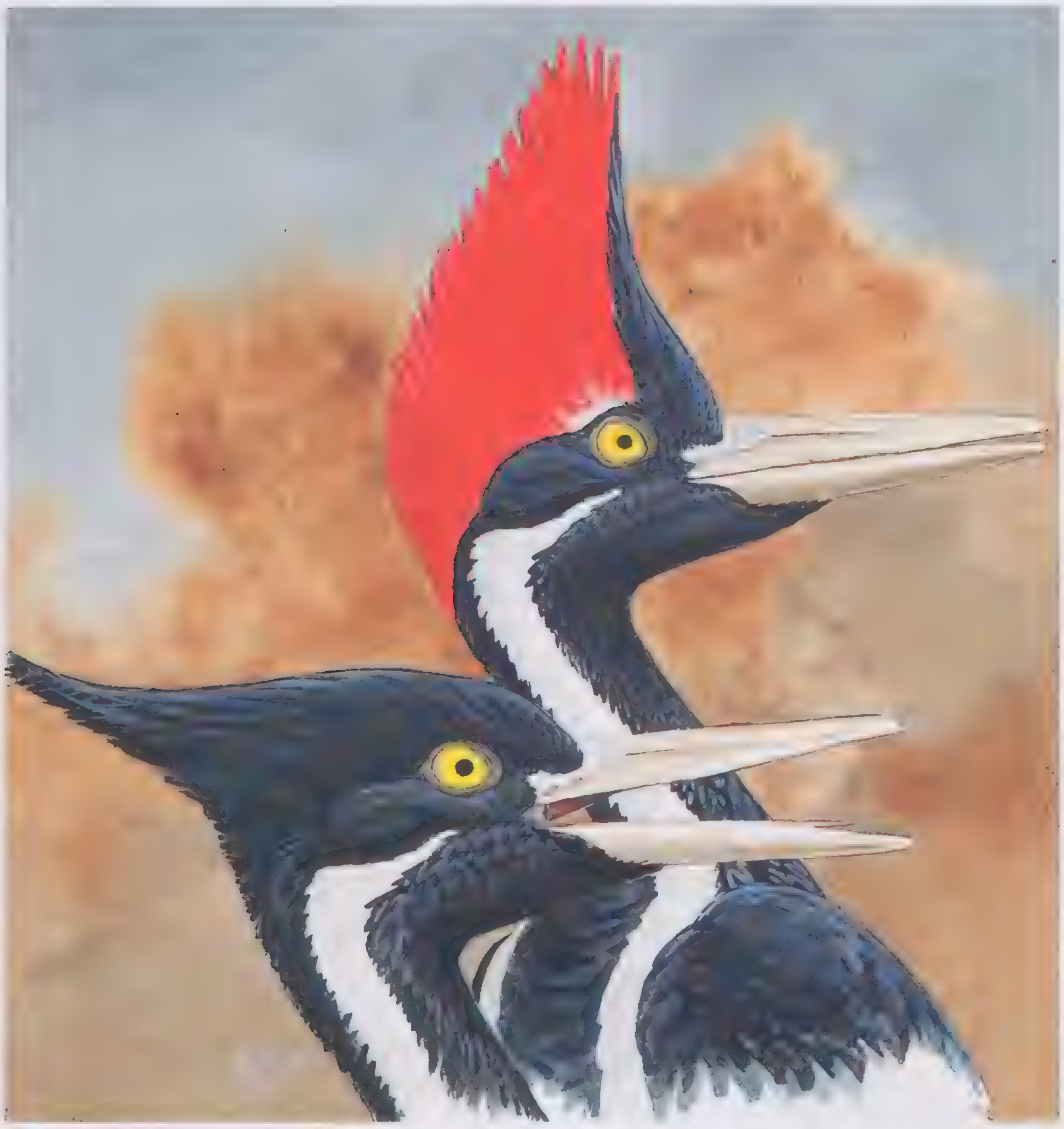
ILLUSTRATIONS BY JOHN SCHMITT

With the ivory-bills, wolves, and panthers in the old Singer Tract

The early dusk of winter filled the Louisiana woods and was beginning to darken the sky. All color was gone; the gray bulks of trees rose from the forest floor to lose themselves in a tracery of branches and twigs black against the sky. As their outlines gradually faded, we trudged along, now on the muddy trail and now through the open woods where the ground was firmer, picking our way around mud-holes and logs, vine tangles and big trees. Jack Kuhn walked ahead with a sack of groceries over his shoulder; I followed with another pack. We were going into camp for another season of studying the Ivory-billed Woodpecker in this forest. As we plodded among the trees, the uppermost thought in my mind was that it was good to be back in the woods again—good to be in a place that I had come to know well, in a forest that was still almost primeval, in a familiar wilderness.

What I want to describe is this wilderness and how it became familiar. The place was a wildlife sanctuary in northeastern Louisiana named the Singer Tract; it was well-known as the home of a few Ivory-billed Woodpeckers, and the only spot where I found these very rare birds in three years of hunting (from 1937 to 1939) throughout the southeastern states. My objective in going there was to study and learn about these woodpeckers, carrying on a research program sponsored by the National Audubon Society. Kuhn was my guide and helper, a man who knew the woods as no other man of my acquaintance ever has.

We—the woodpeckers, Kuhn, and I—lived in the forest, and I came to know it well. It was a bottomland forest of oaks, sweet gum, wild pecan, hackberry, and several other kinds of trees covering over a hundred square miles. At the time of my living there, almost all of this was virgin swamp timber, a beautiful forest with many big trees. The primitiveness of the area was its greatest charm. All the animals that had ever lived there in the memory of man—except the Carolina Parakeet and Passenger Pigeon—still lived there. The hand of man had been laid so lightly on the deeper woods and its inhabitants that it took an experienced eye to see the traces that had been made. The naturalness of the area became more real and impressive the longer I lived and the more I learned in the forest. First I learned where the bayous ran and the lakes lay, and how the forest itself varied from the low flat to the drier ridges, until I could travel in my mind's eye from one part to any other, visualizing every bit of the way. Then I came to know the changes of the seasons, and the trees and animals with them, until the patterns of place and season merged in a picture of the whole, a unity of earth and living things with a life of its own that had not been hurried or twisted by man but was proceeding as it always had.



Winter is the best time to learn of the forest and its permanent residents. The trees stand bared of leaves so that one can see and hear far. Cool weather stimulates traveling, and the low places are covered with water so that one has to learn the country in order to reach his destination without too much wading. Winter weather in Louisiana can be days of steady rain that floods the bayous and sloughs, or it can be bright and clear, cool in the morning but soon warmed by the sun that pours among the trees. The sun dries and crisps the leaves that carpet the earth. It accents the colors in the bark of various trees, so that the woods are subduedly gay. Reddish grays, slate grays, browns—the trunk of each species of tree has its characteristic color. Above the predominantly gray trunks is the maze of brown and red branches and twigs, and over all the clear blue sky.

Winter was the best time to search for ivory-bills. The birds were active and called frequently, their calls carrying far through the leafless forest, and the same bareness made it easier to see and follow them. We searched every day, trying to follow and count the birds before spring made it harder and also made it necessary to concentrate on nesting studies.

One December morning I started out well before daylight and walked through the dark woods to the roost trees of an ivory-bill. Barred Owls were hooting from here and there, and three of them flew from treetops, hooting as they went, near the ivory-bill's roost. By then, 6:30, a dim gray light illuminated the woods. I knew there was plenty of time, so I settled comfortably on a dry hummock. Brown Thrashers were just beginning to call. Soon White-throated Sparrows and a Winter Wren sang, a squirrel mewed, and a Carolina Wren called. At 6:45, the thrashers were very noisy, calling a hoarse, vigorous *charr* that welled up from the undergrowth. The sky in the east glowed rosy-pink, when suddenly and mysteriously the thrashers quieted. Three Wood Ducks flew over and then slanted down, twisting their way through the branches to land nearby in the water.

The next bird to call was a White-breasted Nuthatch. At seven o'clock came the whining cry of a Yellow-bellied Sapsucker, the early riser among the winter woodpeckers. Soon after that a Red-bellied Woodpecker called and others answered immediately. One red-belly flew to the dead stub in which the Ivory-billed Woodpecker roosted, and drummed on the top. Almost at once, a female ivory-bill slipped quietly from her roost hole and jerked her way to the top of the stub, where she rapped and called a few times. Then she flew to another tree, and settled to preen herself, interrupting her toilet occasionally with a call or a sharp pound on the limb. Another ivory-bill answered from a short distance north, and then flew to join the first; it was another female, but judging from its appearance, a bird of the year. The two sleek black-and-white birds called and pounded a few times and then flew off together to begin feeding. I followed them on this day for three-quarters of an hour as they moved from one tree to another, until they finally took a long flight beyond my sight, and I was not able to find them again.

Of the winter birds in the area, woodpeckers were the most conspicuous. Eight species were present: Ivory-billed, Pileated, Red-bellied, Red-headed, Downy, Hairy, Yellow-bellied Sapsucker, and flicker. Red-headed Woodpeckers were almost abundant in some years, while in others they were scarce, and then the Red-bellied Woodpecker was the most common. But whatever the species, the drumming, rapping, and vigorous calls of woodpeckers were to be heard in all parts of the woods from daylight to dark. Flocks of grackles were also conspicuous. Large numbers of them sitting in the treetops made the woods ring with their gurgles and whistles.

During the winter, the Wild Turkeys lived in flocks. On one December afternoon, when I was following the edge of a slough that happened to be called Turkey Brake, walking noisily because of the dry leaves, a single turkey suddenly flew up a short distance ahead. Immediately, about 50 more turkeys exploded from the ground and slanted upward to the lower branches, where they perched and peered around. As always, it surprised me to see such heavy-bodied birds fly upwards so steeply.

These same winter months were the best times to see and watch deer. They were especially conspicuous in December because they fed in the daytime and were kept continually on the move by the bucks chasing the does. Small trees that had been hooked and scraped by the antlers of the bucks were numerous. Also scattered throughout the woods were spots where the bucks had pawed the ground.

The most unusual mammals living in this forest were the panthers and wolves. Of panthers, I never saw more than an occasional track. Wolf tracks were more common, and the wolves also made their presence known by yapping and howling. The first time I ever heard one howl was at a fitting time, for I was more or less lost. It was December, and dusk had caught me on a dim and puzzling trail; I was just considering spending the night in the open, when a single wolf, not too distant, loosed a lonely mournful howl. "Nice company," I thought, and redoubled my efforts, successfully, to find my way.

My first look at a wolf did not come until several weeks later. I had been sitting for some minutes in a part of the woods where the undergrowth was thick with palmettos and vines, when I heard something coming toward me. Soon I glimpsed a black animal that seemed as tall as a small horse. As it came a little more above the palmettos, I saw that it was a coal-black wolf atop a log. It leaped to the ground and disappeared behind a tangle, going to the windward. I half stood to get a better look and saw him well as he crossed an open place about 30 steps away, apparently oblivious of me. He was handsome, powerful but appearing swift with deep chest and lean belly, self-confident and yet alert, completely black from tip to tail.

My observations of the larger mammals were usually little more than glimpses, but the smaller members of the tribe were frequently in evidence. Squirrels, both black and gray, leaped and climbed among the treetops, and skunks foraged among the leaves on the forest floor. Less commonly, we discovered signs of raccoon, opossum, rabbit, bobcat, and more rarely of bear.

Sometimes in February but usually in March came the first signs of spring—warm clear days, a tinge of green on the understory trees, and white blossoms on the haw trees. The first forest trees to sprout leaves were maples, elms, and sweet gum. The filmy green of the new leaves was punctuated by bright red splashes of red maple trees bearing seeds. The first change in the forest floor was the drying of the standing water that had covered much of the ground all winter; the water disappeared magically as the leafing and growing trees sucked it out of the soil. The ground became noticeably drier day by day, and the walking was easier as the paths firmed and the pools disappeared. But not for long was the walking easier. Soon the vines began to grow, green shoots fairly sprung across paths and became knotted on the other side, and tangles of greenbrier and buckvine raised themselves from the ground to lasso and snarl the traveler's foot.

Spring was the busy season for following Ivory-billed Woodpeckers. Like most birds, they are active and noisy in the early morning; consequently we did most of our searching then. The usual routine was to be up an hour before daylight, cook and wolf a quick breakfast, and be on the trail as soon as it was light enough to see the way. It was a wonderful time to be in the woods.

As spring progressed, migrating birds arrived and joined the chorus. The bulk of these songsters were vireos and warblers. A few winter residents like White-throated Sparrows and Hermit Thrushes remained until late, and it was odd to hear their north-woods songs mixed with the lilting songs of Prothonotary and Yellow-throated warblers.

Morning is the time of activity in the southern woods. As the spring day wore on, the birds became quieter, and there was no resurgence of song in the late afternoon as there is in the North. The birds fed a little more actively compared with the middle of the day, and there were snatches of song here and there, but nothing like that of the morning.

The evenings were quiet. After supper, Kuhn and I would sit on the front step of the camp, talking over the day's events and listening for the occasional sounds that come from the forest—a Barred Owl's hoot or the snort of a startled deer. Once we were idly watching a bat flitting about the clearing when a Sharp-shinned Hawk suddenly dashed in, snatched the bat in midair, and disappeared in the shadowed trees. Our talk was of the woods, not only of the birds and other wildlife we had seen but also of the little details that helped us form a complete mental picture of the forest. The location of trees that had fallen across bayous making a foot-log, shallow places where the river could be forded, ridges of tall timber clear of undergrowth that made walking easy, brier and cane thickets that were best to avoid. We talked of these just as Mark Twain's river pilots endlessly discussed the details of the river's course. Although learning of the ivory-bill and its life history was our goal, the forest was our working place and we had to know it—to find our way, to travel quickly, to know where to search. Little by little as I lived there, the details and pieces fitted into the picture, until the sureness of my knowledge increased my enjoyment of the forest.

Whenever men are talking about the woods and relating their experiences, snake stories are almost surely to be told. Timber rattlesnakes were fairly common there and would appear from hibernation with the first green of spring. Occasionally one of us would have a close call, as when Kuhn, who was wading through some thick vines with his eyes glued to the treetops, accidentally stepped on a rattlesnake. The vines were so thick that the only place he could jump was straight up, and every time he came down the snake was still there. I do not know whether Kuhn finally jumped clear or whether the snake broke off the engagement, but Kuhn returned to camp that evening looking considerably whiter than his normal shade of heavy tan.

Although this was an old, virgin forest, it was not a uniform stand of big trees. Its appearance everywhere varied. In some places tall trees stood scattered over a sea of undergrowth; in others they grew so thickly that the floor below was almost clear of growth because of the heavy shade. There were openings clear to the sky, dense groves of young trees, and patches of mixed forest where trees of all sizes grew together. One reason for this variety was the fifteen or so species of trees, each with its own characteristics of growth, and another was the variation in the land from wet slough to dry ridge.

A more dramatic reason for the variety in the shape of the forest was age, and its follower, death. Big trees gradually lost their vigor until damage suffered from insects and disease outweighed the yearly growth; then they gradually died, from the top down, until only a rotten trunk stood alone. In so dying, they supplied food for woodpeckers, bare branches for flycatchers to perch upon, and finally let the sun through to the ground to nurture the bushes, vines, and new saplings. Other big trees died suddenly, falling to the ground of their own weight. More of these seemed to fall during spring than any other season, and oddly, more seemed to give way on days when hardly a breeze was stirring.

The fall of a big tree is a dramatic event, dominating for a brief moment all other events in the forest. The quiet of the wood is suddenly broken by a resounding crack, like a rifle shot, seeming to suspend all activity—everything waiting for what will come; then a series of loud snaps increasing in tempo and merging into a roaring crescendo as the tree crashes downward to hit the earth with a dull, echoing boom. The echoes quickly die away, but the forest still seems to hold its breath until gradually the birds resume their song, the normal quiet sounds return, and the listener collects his scattered thoughts. If one should go to that fallen tree, there would be the massive trunk flat on the ground, the top a jumble of broken and splintered limbs smashed flat by the impact. The odor of crushed leaves would fill the air, and the bright sun pour into the new opening.

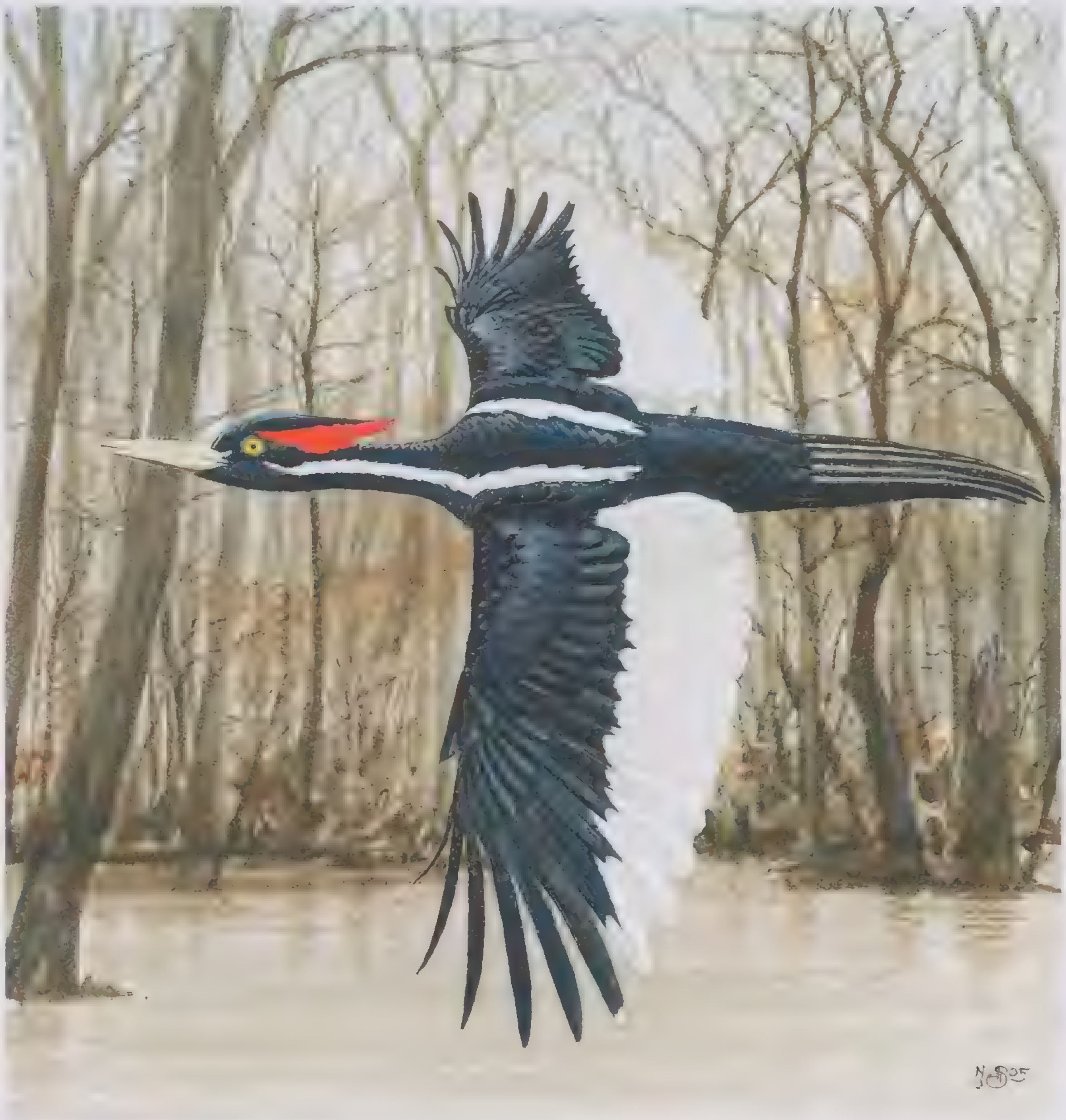
Much was happening at once in the forest in spring. Migration and nesting merged together so that many birds were rearing young while others were still migrating. The early morning birdsong constantly changed in character. On a morning in mid-April when I first stepped out of doors, the stars were bright in a dark sky. A cardinal whistled once. By the time it was light enough to see to walk, a Chuck-will's-widow was calling and the chorus of cardinal whistles was swelling. A Wood Thrush slowly began to sing, and then opened up in full song as others joined him. Thrashers *churred* from the thickets, and then, as if at a signal, Northern Parulas began to sing from all around, making the treetops buzz. The chorus of songs was punctuated once by the call of a Pileated Woodpecker and the startled hooting of a Barred Owl. It was quite bright when the first turkey gobbled, the high, clear gobble of an old bird; he was answered by others in scattered places. The songs continued to increase until sunrise, and by then the woods were actually noisy with woodpeckers, chats, cardinals, vireos, and several species of warblers.

Spring flowed imperceptibly into summer—the quiet season, when during most of the day the woods stood still in the shimmering heat. But beneath the quiet surface flowed a strong undercurrent of life, a current that now and then was seen and felt. During the brief early hour of daybreak, birds were active and sang shortly, the order of song changing little after the middle of May. Most of the forest birds such as the woodpeckers finished their feeding by midmorning.

In the forest were several similar lakes. All were long and slender, for they were old riverbeds, and rimming each was a colonnade of tall cypress trees standing in the edge of the dark water. During the summer day, Little Bear Lake, the largest, was a quiet place. Occasionally a white egret would glide down past the green cypress tops to alight on a snag in the water. In the clear early morning, alligators floated still at the surface—huge, scaly dragons fearing nothing but man. During most of the hot days these lakes lay peacefully under the sun, with surface unruffled by the breeze that brushed the cypress branches over the fish lying deeply below.

But on summer nights the air over the lake shook with the loud calls of several kinds of frogs and toads. Loudest by sheer weight of numbers were the tiny cricket frogs; these were on the floating duckweed and other water plants, one every two feet, sitting and beating out their rasping notes. Other frogs or toads called from the mud at the edge, from the trees and vines, and from the narrow cypress sloughs at the ends of the lake.

I made my way to where a small boat was beached, shoved it off, and paddled from under the black shadows of the trees out to the moon and starlit water. The beam of my flashlight swept across the surface of the water and caught a glowing coal that burned for a moment and then went out—the eye of an alligator that sunk beneath the surface. The chorus of frogs came from all sides. The forest stretched away for miles from the black wall of trees surrounding the lake, and although quiet except for a distant owl hoot, I knew that it was a forest alive, of growing bushes, vines, and trees; and in the forest and its bayous and lakes dwelled the countless winged or four-footed, crawling or swimming animals. There they all lived, for although it was a wilderness to man, to these animals it was their world. ■



James T. Tanner studied the ivory-bills in this magnificent forest from 1937 to 1939, while he was a graduate student at Cornell. He had long hoped that the Singer Tract would be preserved as a national park, but that was not to be. Unfortunately, it was largely clear-cut in the early 1940s, destroying the last known stronghold of the Ivory-billed Woodpecker. When he returned in the 1980s to attend the dedication of the Tensas River National Wildlife Refuge, he discovered that his favorite area of primeval forest, Greenlea Bend, had become a flat, open soybean field.

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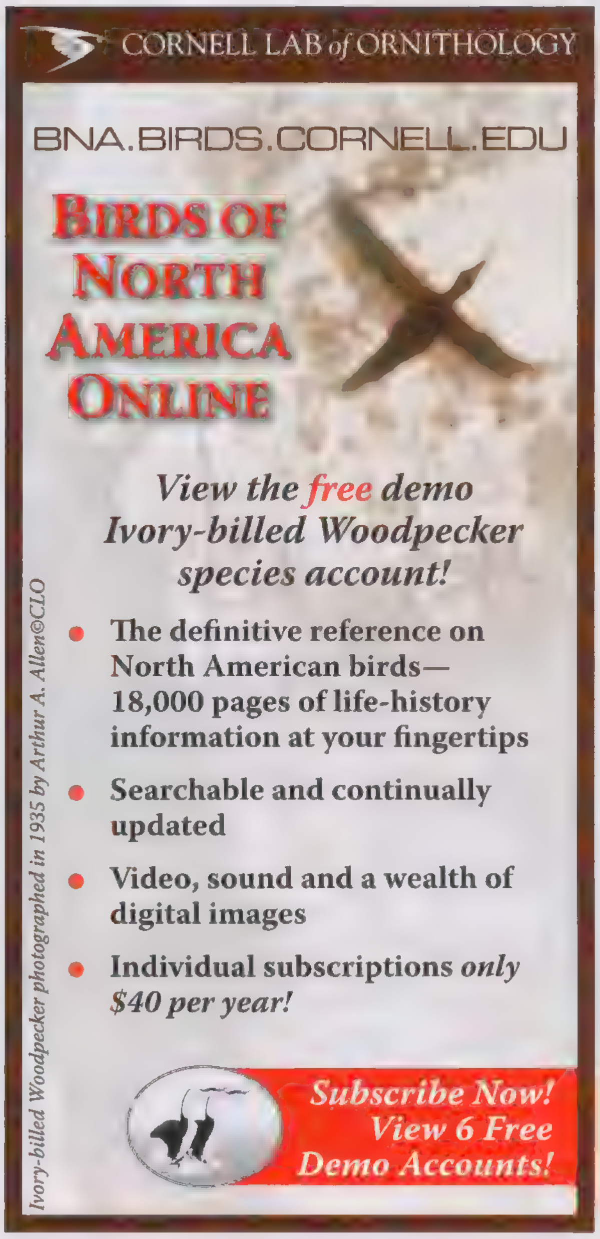

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Ivory-billed Woodpecker photographed in 1935 by Arthur A. Allen©CLO

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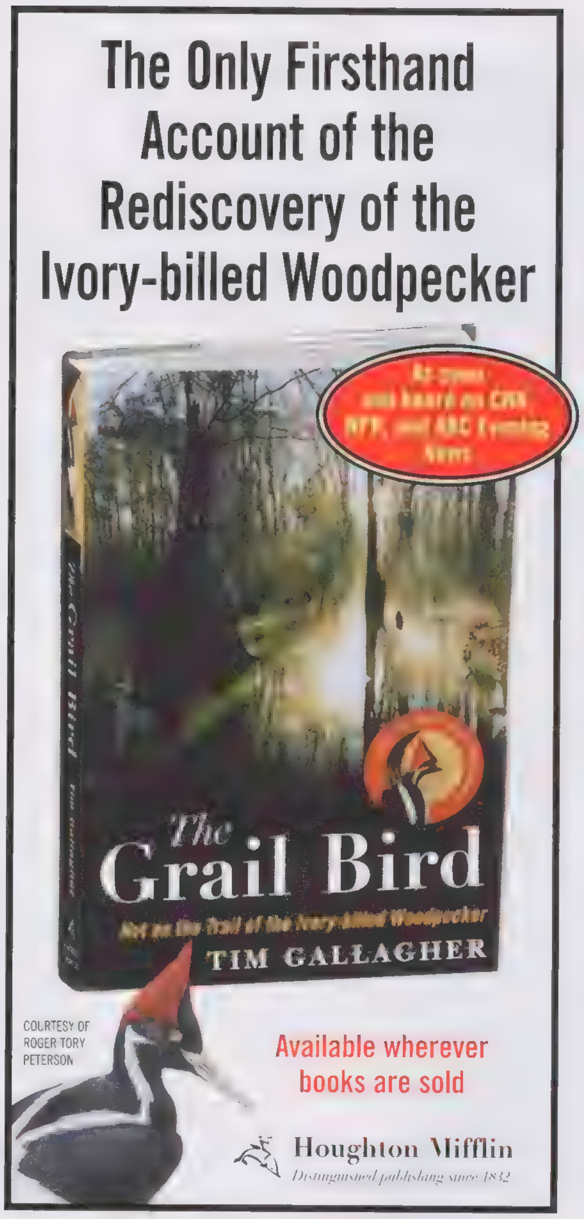

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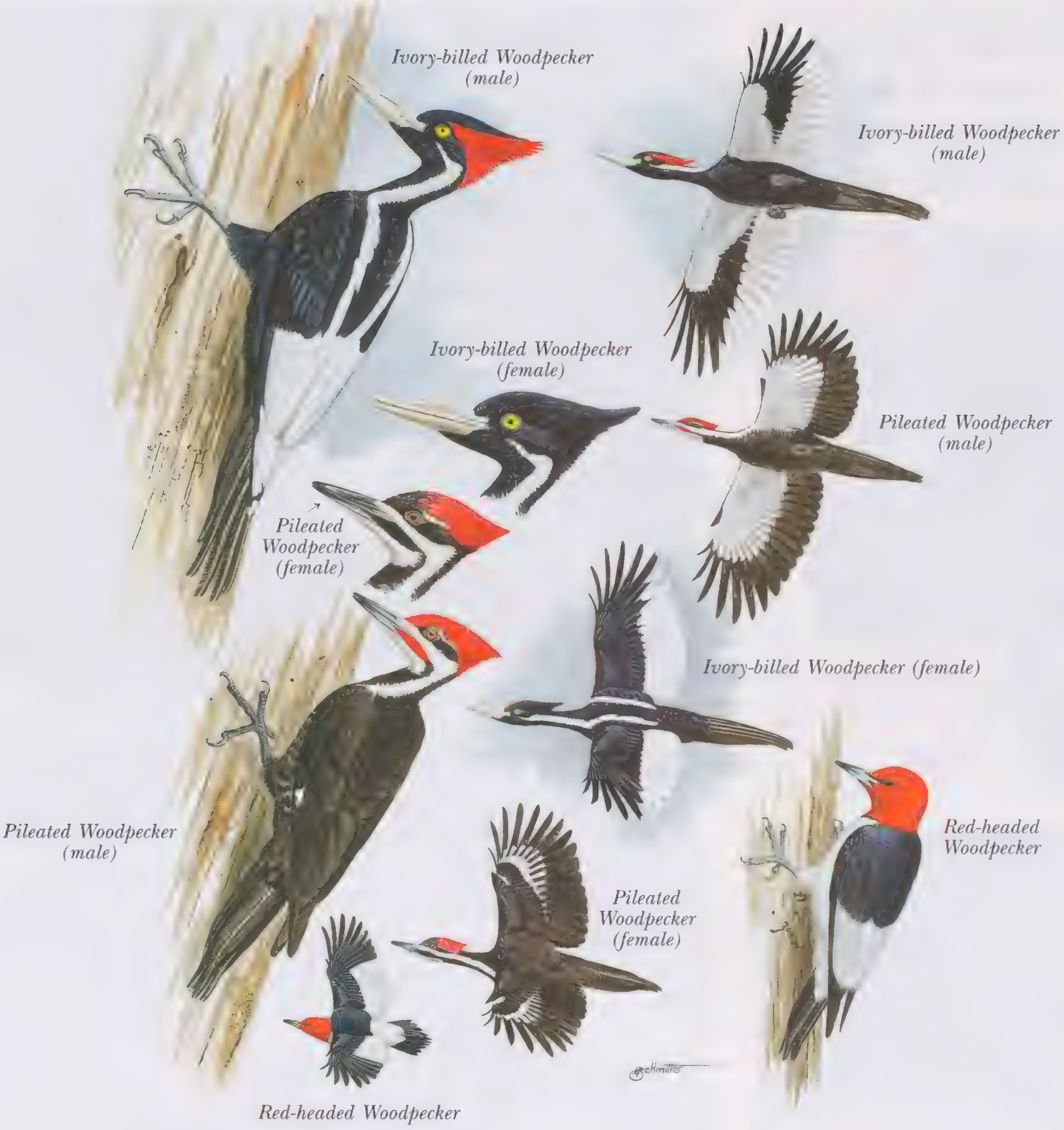
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Ivory-billed Woodpecker (female)
Red-headed Woodpecker
Pileated Woodpecker (male)
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So You Think You've Seen an Ivory-bill?

The first thing to consider is where you saw the bird. Ivory-billed Woodpeckers are secretive dwellers of the southern bottomland swamp forest. If you saw the bird in your backyard in town or another well-populated area away from the swamp or if it was outside the following states—Arkansas, Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, Texas (east)—the chances are slim that it was an ivory-bill.

If you're still convinced that the bird might be an ivory-bill, compare it to the illustrations above. Note that an Ivory-billed Woodpecker has an expanse of white stretching all the way to the trailing edge of its wings, and the female has a black head. The superficially similar Pileated Woodpecker is smaller, has black on the trailing edge of its wings, and both the male and female have red crests. Although the Red-headed Woodpecker also has white reaching all the way to the trailing edge of its wings, this bird is much smaller than the other two (about the size of a robin), and both sexes have red heads without crests.

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GREETINGS FROM SAPSUCKER WOODS

In late August, this issue of *Living Bird* was more or less complete. All of the articles had been edited, the photographs chosen, and the layout designed. I was especially pleased with Mel White's Flying Field column, which provided an in-depth tour of Louisiana's great new birding trail—a string of spectacular wetlands spread along the state's Gulf Coast from the Mississippi border to the Texas state line.

And then disaster struck. Hurricane Katrina came ashore with devastating force, virtually destroying New Orleans and many other areas along the coast.

So the question was: does it make sense to publish an article encouraging travel to a number of refuges that may have been seriously damaged by the storm? After a great deal of thought and a number of phone calls to refuge managers in the areas affected, we decided to go ahead with the article. We have inserted a sidebar by Mel describing the damage done to the worst hit places and their prognosis for recovery. At press time, we did not have enough information to be able to report on the effects of Hurricane Rita, but this storm may have caused more damage than Katrina to some coastal birding areas.

Many people are wondering whether these two powerful hurricanes might have harmed the Ivory-billed Woodpeckers. Actually, natural disasters such as hurricanes and forest fires quite often end up being beneficial to woodpeckers. In a year or two, many trees that were damaged or killed by the storm will become infested with wood-boring beetles—a bountiful source of food for ivory-bills. And the standing dead trees will provide sites for roost or nest cavities.

—*Tim Gallagher*

Cover: In early autumn, a Willow Ptarmigan molts from its rich, reddish-brown breeding plumage. In winter it will be all white except for its dark outer tail feathers. Photograph by Michael Quinton/Minden Pictures.

Right: With feathers that look like fur and no tail or wings, what could be more unbirdlike than the kiwi? See article on page 12. Photograph by Tui De Roy.

Back cover: Two stately Great Egrets perch on a picturesque cypress tree at a refuge on America's Birding Trail. This new trail, which follows the Gulf Coast of Louisiana, was hit hard in places by Hurricane Katrina. See article on page 8. Photograph by John Cancalosi.

LIVING BIRD
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Letters

MARK GODFREY THE NATURE CONSERVANCY

MAN'S BEST FRIEND

The photograph on the back cover (Summer 2005) of Jim Fitzpatrick and his adoring dog (a chocolate Lab?) captivated my imagination: bird dog and master birder paddling down the bayou—looking for Elvis! I'm going to frame it as the quintessential expression of the search for the Ivory-billed Woodpecker. To quote a proverb, one picture is worth more than 10,000 words.

Too bad man's best friend is sitting there worshiping Jim and not looking for the bird. It could have been a robust sighting!

Forrest Agassiz Bogan
Neavitt, Maryland

THE IVORY-BILL LIVES!

I'm still amazed by the news the Cornell Lab of Ornithology announced last April: the Ivory-billed Woodpecker is alive! I must confess, I was one of the dozens (or perhaps hundreds) of commuters who had to pull over to the side of the road when I heard the story on the radio. My vision was too blurred with tears to be able to drive safely. What an amazing reprieve. Just to think that this spectacular bird—which for decades everyone said was extinct—was actually hanging on in a dark remote swamp in Arkansas. You've given us all so much hope, and I will always thank you for that. I was very happy to read your excellent coverage of the search and the rediscovery in the special issues of *Living Bird* and *BirdScope* (Summer 2005). I hope you'll continue to keep us informed in future issues.

Susan White
Los Angeles, California

I enjoyed reading your special coverage of the ivory-bill rediscovery in the Summer 2005 issue of *Living Bird*. I particularly liked the historical material—the early pictures of Arthur A. Allen, Peter Paul Kellogg, and the others during the early Cornell searches for this species. But I was most moved by James Tanner's essay, "A Forest Alive." That's the best thing I've ever read about the old Singer Tract. Tanner obviously was writing from the heart. He loved those woods, and that came through clearly in every word. What a great tragedy that no one listened to him and preserved that irreplaceable swamp forest, with its centuries old trees and its remarkable wildlife. It will take many human lifetimes to bring the southern woods back to anything resembling the Singer Tract of the late 1930s. Let's hope we have the will and determination to do it so that future generations will be able to experience the southern woods as they looked 200 years ago—and hopefully to see some Ivory-billed Woodpeckers.

Robert Martinez
New York, New York

We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

The rediscovery of the Ivory-billed Woodpecker was a major topic of interest at the American Ornithologists' Union (AOU) annual meeting this past August 23–27 at the University of California, Santa Barbara. Five talks—including four presented by researchers from the Lab of Ornithology—covered various aspects of the search for the bird, the rediscovery and its conservation implications, and management practices in the ivory-bill's habitat. Below we present details from two of the AOU talks.

EVIDENCE ON THE WING

Lab director John Fitzpatrick presented new evidence that a blurry videotape taken in April 2004 by David Luneau of the University of Arkansas at Little Rock does indeed depict an Ivory-billed Woodpecker (see "The Bird News Heard Round the World," Summer 2005). The video was the centerpiece of an article that appeared online in *Science Express* on April 28, 2005, and in the journal *Science* on June 3, 2005.

Presenting a plenary lecture on August 25 at the American Ornithologists' Union meeting, Fitzpatrick said a new analysis shows that the wingbeats-per-second ratio of the bird in the video is consistent with that of an Ivory-billed Woodpecker and faster than the flight of a Pileated Woodpecker.

Skeptical ornithologists had claimed that the video images, captured in the Big Woods of eastern Arkansas on April 25, 2004, probably showed a Pileated Woodpecker. However, new studies indicate that the Pileated Woodpecker beats its wings a maximum of 7.5 times per second, but usually much slower and with a rowing motion.

By comparison, the bird in the video flies at a rate of 8.7 beats per second in a direct ducklike flight consistent with historical accounts of flying ivory-bills. Fitzpatrick played an April 1935 audio recording, made by Lab founder Arthur A. Allen, of an Ivory-billed Woodpecker in Louisiana's Singer Tract flying away from its nest hole. The flapping wings are clearly audible. Using a spectrogram showing audio patterns over time on a graph, Fitzpatrick determined that the 1935 ivory-bill had flapped its wings at a rate of 8.6 beats per second.

Conservation was a prominent theme of Fitzpatrick's talk. He said the central message to take away from this rediscovery should be the importance of preserving land and restoring wild areas. The Ivory-billed Woodpecker requires large forests with dying trees, he explained. Younger forests have lower densities of dying trees than older forests.

In the future, he said, Ivory-billed Woodpeckers should be used as a symbol to set priorities for returning southern ecosystems to their past glory.

—Krishna Ramanujan

SOUNDS OF THE SWAMP

Russ Charif of the Lab of Ornithology's Bioacoustics Research Program gave a much-anticipated talk on August 24, presenting an analysis of the sounds recorded in the Arkansas study area during the past field season.

Autonomous recording units (ARUs) had been set up in the Cache River and White River National Wildlife Refuges, recording for four hours each morning and four hours each late afternoon from December 2004 through April 2005. By the end of the season, the team had amassed more than 17,000 hours of recordings—which had to be searched thoroughly, first by computer and then by acoustic researchers. A number of recordings revealed nasal tooting calls and rapid-fire double-raps—strikingly similar to the known calls and display drumming of ivory-bills.

One recording from January 24, 2005, offered the first suggestion that two Ivory-billed Woodpeckers might exist in the White River National Wildlife Refuge in Arkansas. The audio contains a distant double-rap followed three-and-a-half seconds later by a louder, closer double-rap response—the kind of back-and-forth communication typical of woodpeckers in the *Campephilus* genus, such as the ivory-bill.

Expert reviewers have to date identified 54 ARU recordings of double-raps that may have been made by Ivory-billed Woodpeckers, because they occurred at appropriate times and places for the species. Charif also played some recorded calls that sound strikingly similar to the ivory-bill *kent* calls recorded by Arthur A. Allen and Peter Paul Kellogg in Louisiana's Singer Tract in 1935. The most impressive series of calls were recorded less than a mile from where the best double-raps were recorded in January 2004.

Still, Charif noted, the recordings are not definitive proof. Breaking tree branches, gunshots, machinery, and raindrops falling on or near a microphone could potentially create some double-rap sounds; nuthatches can sometimes sound like an ivory-bill on a recording; but most important, Blue Jays are excellent mimics and have been known to make tooting sounds.

For that reason, the Lab is inviting the public to send in recordings of Blue Jays making *kent*-like calls. At this time, none of the Blue Jay recordings in the Macaulay Library's entire collection resembles the new recordings from the White River.

A web page dedicated to the new audio findings was launched simultaneously with Charif's AOU talk. To listen to the recordings or to get instructions on how to submit Blue Jay recordings to the Lab, go to <birds.cornell.edu/ivory/filed/listening/>.

—Krishna Ramanujan

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AMERICA'S WETLAND BIRDING TRAIL

by Mel White

On the road to birding bliss in Louisiana

This article, which extolls the beauty and richness of the many great birding areas on the coast of Louisiana, was all set to go. The text was edited, the photographs were laid out. And then Hurricane Katrina struck. What to do? Should we pull the article and run something else in its place? Instead, we decided to publish the article as written, but provide an in-depth sidebar on page 10 to examine how these vital bird areas were affected.

—Tim Gallagher

I hear 'em, ya'll," Charlotte Parker said, pointing toward an open stand of tall pines. Raspy call notes sounded in the distance, blending with the whistling of Eastern Towhees and the trilling of Pine Warblers.

It was nearing dusk in Big Branch Marsh National Wildlife Refuge, on the north shore of Lake Pontchartrain in southeastern Louisiana. Parker is a refuge biologist, and the sounds she noted were coming from a family group of Red-cockaded Woodpeckers, approaching their cavity trees to go to roost for the night. This endangered bird, a southern pinewoods specialist, has found a home in this 15,000-acre tract of flatwoods and wetlands less than an hour from New Orleans.

"When the refuge was established, no one even knew that the woodpeckers were here," Parker said. "The land was bought to preserve the marsh. Now we have seventeen family groups, and the population is expanding. We have six new nests this spring."

The sought-after Red-cockaded Woodpecker can often be seen at Big Branch Marsh, where an active roost tree is visible from the parking lot of the refuge's Boy Scout Trail.

"That was the first area where we put artificial cavity inserts in the trees to encourage them to nest," Parker said, "and they moved in within a week."

The presence of these endangered woodpeckers makes Big Branch Marsh unique among the 115 sites on the new America's Wetland Birding Trail (AWBT), which stretches across southern Louisiana from the Sabine River on the west to the Pearl River on the east. Inaugurated in April 2005, the AWBT joins a burgeoning list of birding trails across America, and, like many of the others, combines birding travel information with conservation action, tourism promotion, economic development, and the exigencies of state and local politics, money, and influence.

Take the trail's name: as many people know, Louisiana is suffering what can legitimately be called an environmental crisis, if not an out-and-out catastrophe, with its coastline subsiding and marshes disappearing at the rate of an acre every 33 minutes. The state wants the federal government (i.e., all American taxpayers) to pay for efforts to stop this loss, to the tune of around $14 billion. The reasoning, in grossly oversimplified terms, goes like this: the marsh devastation has been caused primarily by fiddling with the Mississippi River's natural flooding cycle and course changes (through levees built by the U.S. Army Corps of Engineers) and secondarily by massive dredging and canal-building for oil and gas wells, the products of which we all use. In addition, coastal erosion is endangering vast areas of wildlife habitat, a major part of the country's seafood industry, and a significant percentage of the nation's oil and gas production.

The situation is so grave, and the possible consequences so bad, that it has united Louisiana environmentalists and developers, Democrats and Republicans, cities and rural areas. To try to raise the country's awareness of the issue and gain support for funding, the state has created a public-relations campaign called America's Wetland, complete with logo, web site, cute cartoon spokespeople, and Washington lobbying firm. Louisiana has been enthusiastically joined in the effort by oil companies, which are scared to death they'll be stuck with paying for the damage they in part have caused.

Ergo, America's Wetland Birding Trail, rather than, say, the Louisiana Coastal Birding Trail, which would be far more accurate and descriptive. But politics, money, and public relations are at work, albeit in a good cause.

Over a two-week period just before its official dedication, I explored a sampling of the AWBT, revisiting places I'd been before and learning about new ones. In company with Louisiana friends, I first headed to Cameron Parish, in the southwestern corner of the state. A parish is equivalent to a county, and Cameron holds the distinction of being both the largest and least populated in Louisiana. Covering an area larger than Rhode Island, Cameron has one stoplight (in the tiny town of Creole). At the top of the Gibbstown bridge over the Intracoastal Waterway—the highest spot for miles and miles—you can see why Cameron calls itself "Louisiana's Outback." Marsh, wet grassland, canals, and lakes stretch all around, a shimmering mosaic of water and vegetation. It boggles the mind to think how many herons, egrets, bitterns, ibises, gallinules, rails, Sedge and Marsh wrens, and assorted other skulkers must be out there at any given moment.

Three huge national wildlife refuges—Lacassine, Cameron Prairie, and Sabine—are largely inaccessible to anyone lacking a boat and local knowledge, but all three offer a sampling of what's hiding in the reeds and cattails. At Lacassine we drove a dike road along big, shallow impoundments, where we watched and heard an American Bittern giving its "pumping" call and admired a substantial flock of Fulvous Whistling-Ducks and dabblers, including one gorgeous male Cinnamon Teal. Harriers sailed over the marsh, where the array of waders included White, White-faced, and Glossy ibises.

The 2.8-mile wildlife drive at Cameron Prairie National Wildlife Refuge is a great spot for people who might not be able to walk much. Shallow open water, marsh, grassland, mudflats, and scattered shrubs and small trees stretch just outside the car window. (And alligators, too, haul out to sun themselves on the levees.) Birders ready for an easy 1.5-mile stroll should head to Sabine National Wildlife Refuge, where a loop walkway leads through a freshwater marsh. We must have been too early for Purple Gallinules, common breeders here, but a Marsh Wren popped up carrying cattail fluff for its nest, and a Sora obligingly fed in the open on a mudflat for several minutes. My friends said that in spring migration they simply sit on the shaded bench near the entrance and watch for whatever shows up in the line of mulberry trees along the levee.

These are all well-known places that I'd visited several times before, as is the Peveto Woods Sanctuary, on the coast near Holly Beach. Anyone who's birded High Island in Texas knows the appeal of Peveto: it's an isolated patch of live oaks, hackberries, and other trees that can be a magnet for trans-Gulf migrants in spring. The joint wasn't really jumpin' on our visits, but we managed to find a few warblers, including Blue-winged, Orange-crowned, Prothonotary, Worm-eating, Kentucky, and Hooded, along with various flycatchers, vireos, thrushes, and tanagers.

JOHN CANCALOSI

Louisiana's new "America's Wetland Birding Trail" takes visitors through a variety of coastal habitats. Above, an adult Little Blue Heron preens its stately plumes.

At Martin Beach we watched a Merlin ineffectually trying to scare up (literally) a grackle lunch. Fabacher Road was good for sparrows and various raptors, though not, this day, for the Crested Caracaras that have nested nearby (and nowhere else in Louisiana) for years. At Holmwood, I was surprised to see two Swainson's Hawks soaring together. Louisiana birders suspect this western species might actually be nesting somewhere in the area. In the small town of Hackberry, the AWBT guidebook led us to the Volunteer Lane Rookery, where Great and Snowy egrets, Roseate Spoonbills, and Neotropic Cormorants were noisily (and colorfully) nesting just across a small pond from the parking area. My Louisiana friends themselves hadn't known the rookery was there, despite the fact that they'd "driven past here

A HURRICANE CALLED KATRINA

The costs of Hurricane Katrina were still mounting as this issue of *Living Bird* went to press, but they entailed hundreds of lives lost and hundreds of thousands disrupted, billions of dollars in damages, and the devastation of much of New Orleans and adjacent areas of the Gulf Coast. The damage done to natural areas and other aspects of the environment was also undetermined, although some preliminary estimates had been attempted.

At Big Branch Marsh National Wildlife Refuge, on the north shore of Lake Pontchartrain, high winds caused "massive tree destruction," according to refuge manager Ken Litzenberger. As many as 50 percent of the refuge trees may have been destroyed, including much of the Red-cockaded Woodpecker pinewoods habitat. Many pines not blown down were killed by the storm surge of saltwater, and standing dead timber created an extremely worrisome fire hazard.

Grand Isle suffered widespread damage to houses and businesses, with a high percentage being completely destroyed. Despite its vulnerable geographic location, though, and despite the fact that Katrina's eye passed only a short distance to the east, this barrier island escaped the complete devastation that many assumed would occur. Aerial photos taken immediately after the hurricane seemed to show that the island's oak forests, adapted to storms over countless years, had survived mostly intact, able to welcome another spring's flight of tired trans-Gulf migrants.

Chandeleur Island, part of Breton National Wildlife Refuge, was severely damaged by Katrina, losing as much as 90 percent of its land area. The island was a major nesting site for Brown Pelicans, Laughing Gulls, and Royal, Caspian, and Sandwich terns.

Amid Katrina's terrible toll, some environmental good may result. There could be no more potent demonstration of the importance of Louisiana's (and other areas') coastal wetlands and barrier islands in protecting against storm surge and related hurricane damage. Legislation to fund wetland restoration, which had stalled in Congress before Katrina, may be given new impetus.

Eventually, birders and other ecotourists will be able to make a contribution to the economic recovery of southeastern Louisiana and coastal Mississippi and Alabama. Once a sufficient amount of infrastructure has been replaced and lives in the region have regained a degree of normalcy, travelers should consider a trip to southern Louisiana, not only for the birds but for the unique culture, food, and music. The Roseate Spoonbills will return to the marshes, the Swallow-tailed Kites to the swamps, the shorebirds to the rice fields and beaches, and the warblers to the woods of Grand Isle. The coastal environment will endure—as will, many of us hope, the substance and spirit of the beautiful, gaudy, diverse, laissez-faire city of New Orleans.

—Mel White

about a million times" on Highway 27, just two minutes away.

My companions also took me to a well-known local birding spot I'd never seen before. The rock Cameron jetty stretches far out into the Gulf of Mexico, and the mudflat that has built up at its base attracts birds year-round—on this day, pelicans, waders, plovers, curlews, godwits, avocets, sandpipers, gulls, terns, and skimmers.

A couple of weeks later I was in the New Orleans area, exploring some of the sites on the eastern end of AWBT. I'd birded around here before, at excellent AWBT spots such as Big Branch Marsh National Wildlife Refuge and Bayou Sauvage National Wildlife Refuge, the Barataria unit of Jean Lafitte National Historical Park, and Pearl River Wildlife Management Area. I was looking forward to seeing some new areas on this trip.

For me, the highlight was a chance to visit Grand Isle, a barrier island (and small town of the same name) about two hours south of New Orleans, where Highway 1 dead-ends at the Gulf. Grand Isle combines some of the characteristics of such famed birding destinations as High Island, Texas; Dauphin Island, Alabama; and Cape May, New Jersey. In spring, and to a lesser extent in fall, the locals have gotten used to seeing people with binoculars wandering the streets, peering up into the trees, hoping for a "fallout" in which vireos, warblers, and tanagers rain from the sky.

In 1998, birders and local interests began the Grand Isle Migratory Bird Celebration, which now attracts as many as 600 visitors each April—a significant number for a town with a permanent population of about 1,400. The purpose, as one of the organizers said, was "to raise the awareness of the local people about what they have here," as well as to raise money to buy sanctuaries on the island. Such is Grand Isle's value to migrants that The Nature Conservancy and Louisiana birding groups have acquired several wooded tracts on the island for conservation purposes.

The weather was just too good during this year's festival for the best birding. (It usually takes a stormy cold front, or at least strong north winds, to force tired migrants into the shelter of Gulfside trees.) By the vagaries of migration patterns, though, Grand Isle was overrun, figuratively speaking, with Scarlet Tanagers, Rose-breasted and Blue grosbeaks, and Orchard Orioles. As is usual when lots of birders gather, news of rarities traveled fast: here a Hooded Oriole, there the island's first Cave Swallow, and—most exciting to the locals—a Red-headed Woodpecker, which obligingly posed at one of the residences with a "Birder-Friendly Yard" sign.

More importantly, during this year's festival, a spokesperson for The Nature Conservancy and the New Orleans Audubon Society announced the successful conclusion of an effort under way since 1991: an agreement to buy the 17-acre tract known as "the Sureway woods," located behind a Grand Isle grocery store. Though birders have had free access to the area (and seen countless rarities there), it had remained in private ownership, and various development plans had been rumored over the years. The Sureway tract is the largest remaining area of oak-hackberry maritime forest in Louisiana, rated G-1 (of the highest global importance) by The Nature Conservancy.

It's at times like this that birding takes on a higher value than simply ticking off more species on a list than the next fellow. It was birders who emphasized the worth of the Sureway Woods and other Grand Isle sanctuaries, and who raised money to protect them; it was birders who convinced ExxonMobil to allow the reforestation of a tract the company owns on the eastern part of the island; it was birders who showed Grand Isle that it's not only deep-sea anglers who sleep in the island's motels and eat at its restaurants.

In the same way, projects like America's Wetland Birding Trail do more than simply guide birders to their lifer Red-cockaded Woodpecker or Roseate Spoonbill. From the first, well-known trails like the Great Texas Birding Trail and Great Florida Birding Trail to smaller ones like North Dakota's Birding Drives and the Great Plains Trail of Oklahoma, the true worth of officially designated birding routes is to show politicians, government officials, and local economic interests that birders mean money, that natural areas have value as something more than potential sites for Wal-Marts or apartment complexes.

Although the importance of environmental protection and habitat conservation ought to be apparent to everyone—for the health of the planet and all its inhabitants, including people—in the real world it doesn't work that way. In Louisiana and elsewhere, birders and other conservationists are learning to team up with politicians, tourism promoters, and anyone else who can be enlisted in the cause of nature, because, in these times, we need all the help we can get. ■

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Wild Delight

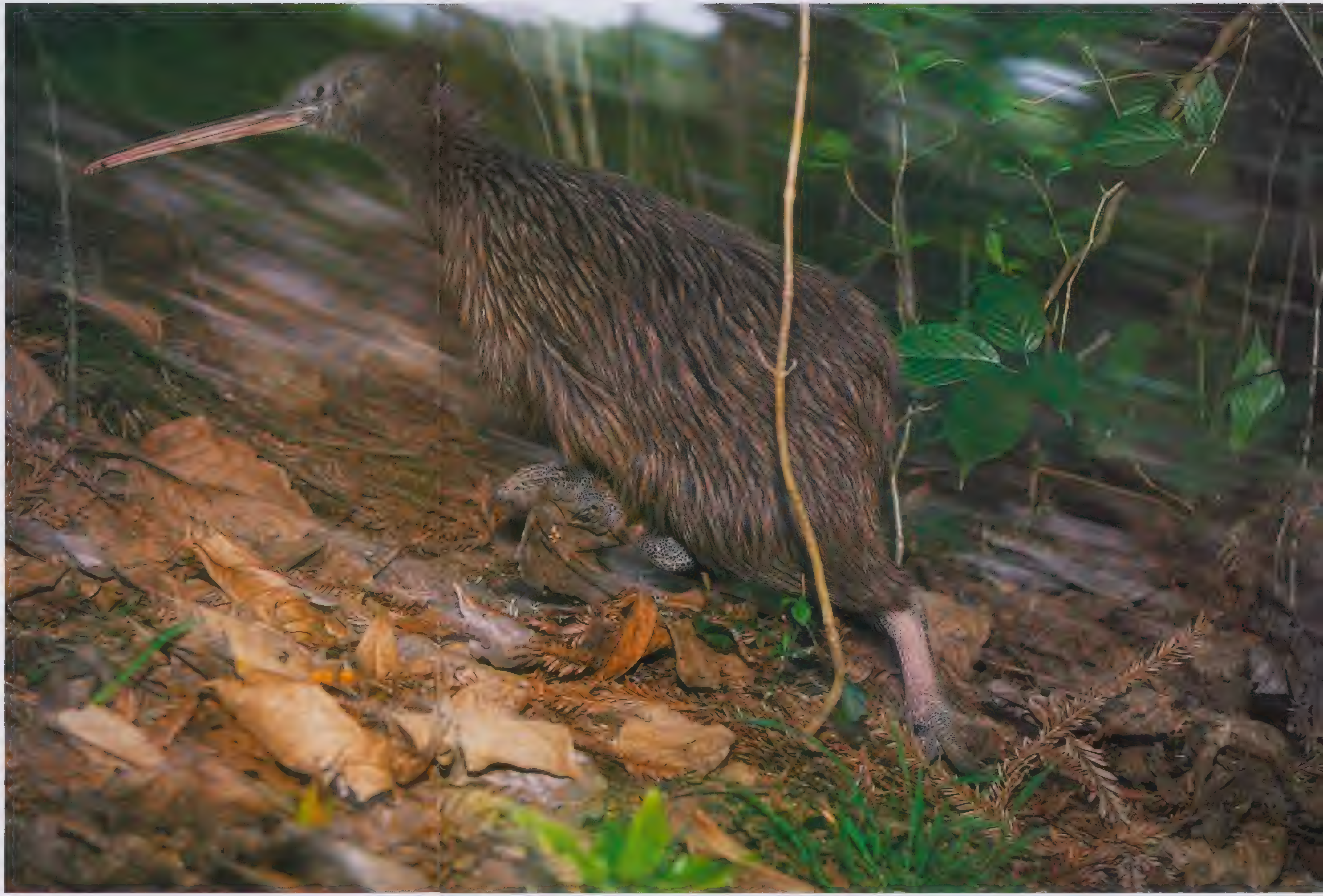
A Most Unbirdlike Bird

With the kiwis in New Zealand

TEXT AND PHOTOGRAPHS
BY TUI DE ROY

Few places exist on earth where the silence is so deafening, the darkness so total, as in the primal forest of New Zealand on a moonless, windless night. Seventy million years in the making and virtually unchanged through this time, its deep, dank mossy recesses are among the wildest I have ever known. But for now I sit patiently on this frosty winter night, my eyes fixed on the topmost star of the Southern Cross glinting between the foliage overhead, my senses so acutely sharpened I can hear my own heartbeat. I listen and wait.

Suddenly, like a steel blade stabbing the night air, an electrifying sound tears apart the stillness: a male kiwi lets rip his territorial call from the forested ridge just above. Half scream, half whistle, repeated over and over again, the strident notes rise with intense conviction—questioning, asserting, proclaiming: *cruuuik . . . cruuuik . . . cruuuik.* I hold my breath, feeling the hairs stand up on the back of my neck in a strange mixture of excitement and a flash of something like fear. Within a few seconds a similar volley of



With their wingless torsos and fur-like feathers, kiwis look almost more like mammals than birds. The adult female brown kiwi at right is just a blur as she runs past in the darkness.

BHL

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A Great Spotted Kiwi (above and on facing page) forages for earthworms in the damp understory of a rainforest. These birds probe with their long bills, using their keen hearing, a well-developed sense of smell, and sensitive facial hairs to detect their prey. A brown kiwi inspects its egg, at right. Kiwis lay enormous eggs for their size—up to 25 percent of their body weight.

calls erupts from even closer, equally forceful but harsher still, a combination growl and scream sounding remotely like the creaking of a very old, very rusty, very loud barn door. No more than 50 feet away in the inky darkness a female kiwi, her voice typically much deeper than the male's, is responding to her lifelong mate on their nightly forest rounds.

Then, just as abruptly as this strange duet started, silence returns, and I am left to ponder my stroke of good fortune at finding myself at last in the company of one of the world's most bizarre, secretive and well-loved birds. The New Zealand kiwi is arguably the most unbirdlike bird that ever existed—so much so it was once regarded as a scientific hoax and more recently termed an "honorary mammal." For a start, it is completely tail-less and flightless, not even able to flap the stubs of remnant wings for balance. It sports long sensitive whiskers like a cat, and soft, shaggy hairlike feathers resembling a mammal's fleece. Its sturdy muscular legs account for a third of its body weight and it can lope through the forest like any shy small mammal might. It is nocturnal like a rodent and lives in burrows like a badger. Its body temperature is lower than that of other birds which, at around 100° Fahrenheit, is again closer to that of many mammals.

But the most amazing thing about the kiwi are its senses. Departing completely from other birds, the kiwi has traded the keenness of avian eyesight for acute hearing and smell. Its ears are so well developed they can easily be seen through the bird's furlike head feathers. Even more extraordinary is its ability to sniff out its food unseen through the forest leaf litter with a nose as sensitive as that of a dog. Unlike all other birds, the kiwi's nostrils are situated near the very tip of its incredibly long, thin, flexible beak, which it uses like a combination forceps, probe, and scent detector. It can thrust this remarkable device, up to seven inches long, completely underground to sniff out earthworms, its favorite food. Or it may lift it into the air to detect smells wafting on the wind. Thanks to this unorthodox tool the kiwi may snuffle along the forest floor like a hedgehog and probe the ground for invertebrates like an anteater.

Equally bizarre is the way kiwis breed. The female is up to 30 percent heavier than her

A male brown kiwi does a nocturnal patrol of his extensive territory in the grassy sand dunes of Stewart Island, above.

mate and produces an egg that is one of the largest of any bird (in terms of the ratio between egg and body size), up to 25 percent of her own weight. A domestic chicken of the same size lays eggs less than one-sixth as large. This giant egg in turn consists of nearly two-thirds yolk, an incredible energy investment. Not surprisingly, a wild female kiwi lays only one or two eggs a year, which, depending on her species, she may leave entirely to her mate for the incredible 70 to 80 days of incubation. When the chick finally hatches it is already fully feathered and resembles a miniature chip off the parental block. At the age of two weeks, it will wander into the forest alone, a fully autonomous mini-kiwi.

All these thoughts flood through my mind on this night as I try to imagine this pair on their independent foot patrols of their shared territory, which in some cases may be as large as 100 acres. Where did kiwis come from, why are they nocturnal, and how did they come to have such a mammalian lifestyle?

The story goes back to the time when what was to become New Zealand first split away from the supercontinent Gondwana, cast adrift like a ship from its mooring. At that time, mammals were still an evolutionary minority and birds reigned. At home on an island, which to this day has never known native land mammals except bats, it was perhaps only natural that the kiwi came to be. It appears to be distantly related to the rest of the flightless ratite family, like Ostriches in Africa and Emus and cassowaries in Australia and New Guinea, although it is by far the smallest of the tribe. Five different species of kiwi have been recognized: the Great and Little Spotted kiwis and three types of brown kiwis. These range in size from a small bantam hen to a large Rhode Island red.

The hours pass quickly and silently on my night vigil in the winter woods. An icicle falls free from an unseen fern frond nearby, tinkling like broken glass. Then more silence. Far in the distance another kiwi calls faintly from across the valley. Suddenly, footsteps crackle and crunch through the leaf litter, heavy and firm and approaching fast. Startled into full wakefulness I flick on my pocket light, partially covering its beam with my fingers to lessen its effect. And there she is in all her aberrant glory—a female Great Spotted Kiwi as large as they come, standing about 18 inches tall, beak tucked straight down and razor sharp claws lifted and ready to lash out at the trespasser, though nowhere close enough to carry out the threat. I know kiwis are extremely defensive of their turf, especially males who may fight each other to the death with powerful slashing claws. Occasionally they may even try to evict a human intruder, so I'm hoping she'll come closer to investigate. I can see her fine, speckled, mousy "fur," her needle-like flesh-colored bill, and her massive legs and feet planted squarely, wide apart. Then quickly she ducks behind a tree trunk and vanishes. Her heavy footfalls and loud snorting sniffs tell me she is still checking me

An adult female brown kiwi (above right) probes for sand hoppers in rotting kelp. Afterwards, she drinks from a nearby stream (below right).

MARK JONES

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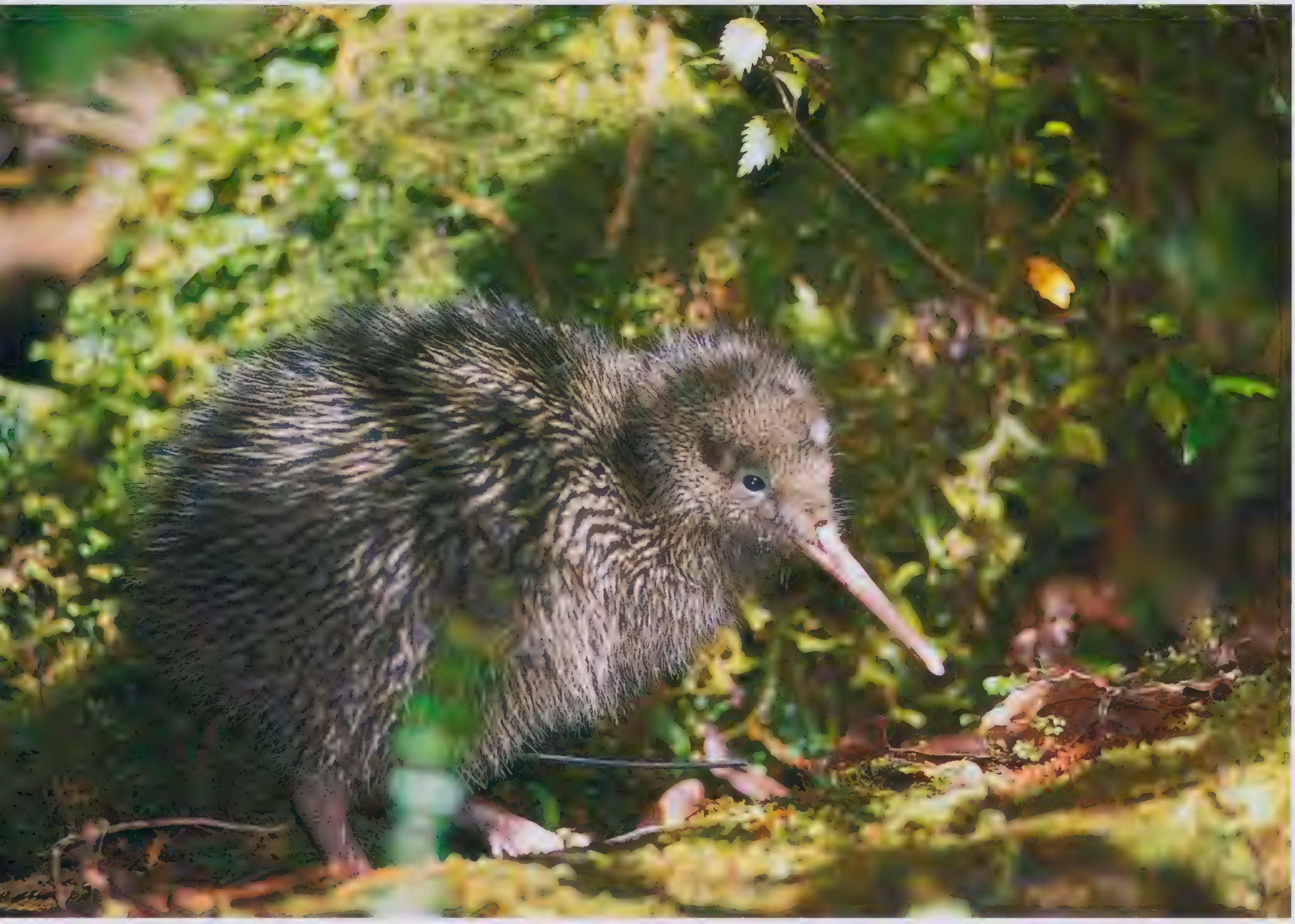

A three-week-old brown kiwi chick (above) forages alone in daylight in the Okarito Forest. Chicks are extremely vulnerable to introduced predators. Only some 200 kiwis exist in this forest. At right, an adult male at the entrance of his burrow in the same area.

out as she circles around me for a good 10 minutes, but try as I may I cannot make her out through the undergrowth.

At last she vanishes like a ghost into the night. I return to my small tent, half frozen and elated at my encounter. I have walked 40 kilometers up a forest track from my home on the shores of Golden Bay on the South Island of New Zealand for this magical moment. This is an encounter few people are lucky enough to experience, even those born and bred in this country. Yet for all of its secretive, cantankerous nature, the kiwi captured the spirit of New Zealanders by storm long ago. The native Maori people, whose ancestors arrived from other Pacific islands some 1,000 years ago, still revere the kiwi as a creature of legend, one who, according to tradition, protected them and provided them with food. To the Maori the kiwi is an older brother, the child of Tane, god of the forest who fathered much of the natural world, including birds, trees, and humans. The kiwi equally found a place in the heart of the hardy European pioneers later colonizing its island home.

This bewhiskered, burrowing creature of the night forest, half myth, half ornithological absurdity, a tough little survivor who asks nothing of anyone and prefers to be left alone, somehow came to represent the essence of all that is New Zealand. Even though it was the Southern Cross, not the kiwi, that made it onto the New Zealand flag in 1869, followed by the silver fern (one of New Zealand's many beautiful tree ferns) becoming the country's official badge in 1888, the kiwi soon took over as the nation's mascot of choice. As early as 1887 the newly opened Auckland University used the kiwi on its coat of arms, and a rather arthritic looking specimen graced the front of the first New Zealand two-shilling coin. Kiwi Shoe Polish served to shine soldiers' boots through two world wars, when the logo made it into no less than 115 countries. This connection rubbed off on the New Zealand fighters abroad, who became known as "Kiwis," a nickname soon enthusiastically adopted by all New Zealanders. Eventually, the kiwi symbol found its way onto the New Zealand Air Force roundel, as well as on street names, billboards, tourist informa-

MARK JONES

Researchers Chris Rickard (left) and Selena Brown track kiwis at Okarito Forest, using radio-telemetry as well as a trained kiwi-searching dog.

tion signs, shop logos, municipal garbage bins, and even McDonalds hamburger stands. The hunkering bird outline has come to replace the silver fern as the trademark on export products, with items as diverse as spring water, dairy cream, and golf tees proudly sporting the kiwi name.

Yet what has become of the real bird, the true living kiwi whose nightly call echoes through mountain ranges and valleys? Sadly, its haunting scream is fast disappearing from the forested mountains. As early as the 1840s, less than three decades after the first brown kiwi was discovered and before either the Little Spotted or the Great Spotted kiwis had been identified, a naturalist of the day noted the birds were disappearing due to predation by cats and dogs. For a while kiwi "fur" was prized as fashionable muffs and garment trimmings in Europe. Rising concern, coupled with a budding popular love, prompted the government to afford the kiwi complete legal protection in 1896.

More than a century later the kiwi, secretive as ever, has been slow at giving out details of either its life cycle or its plight. Lulled by its official protection, together with New Zealand's impressive record at setting aside large tracts of virgin forest as national parks and reserves, many people assumed the kiwi would be safe forever. Only a few keen observers began noticing over the last few decades that many areas of seemingly unspoiled forest no longer ring with kiwi calls, often the only tell-tale sign of their presence.

MARK JONES

Phil Tisch and Tansy Bliss (above right) attach a tiny radio transmitter to a brown kiwi at the Haast Kiwi Sanctuary in Westland. This close-up detail of kiwi feathers shows how much they resemble the fur of a mammal.

Meanwhile, researchers from the New Zealand Wildlife Service (now called the Department of Conservation) began spending many months each year in the rugged mountains and rain-drenched forests, painstakingly gathering data on things like territory size and habitat requirements, feeding and breeding biology, and conservation threats. Piece by piece a new picture of the kiwi has emerged, with some startling new twists.

Kiwis are long-lived birds, some possibly living as long as 30 or 40 years, and in many cases are devoutly monogamous. One male was still a widower 10 years after he lost his mate. Adults are feisty enough to hold at bay many of the introduced predators man has thrown at them, such as ferrets, weasels, and stoats released from abandoned fur farms. But the kiwi's Achilles' heel is its totally unorthodox breeding system. In many populations the incubating father must leave the nest unattended to feed, so predators often cash in on his absence to steal the egg. And because young kiwis become independent when they are only one-fifth the size of their parents, they make easy targets for the alien predators. Even the Australian brush-tailed possum, a marsupial introduced in the last century as another fur bearer and long thought to be exclusively vegetarian, turned out to have a predilection for kiwi eggs and chicks. The

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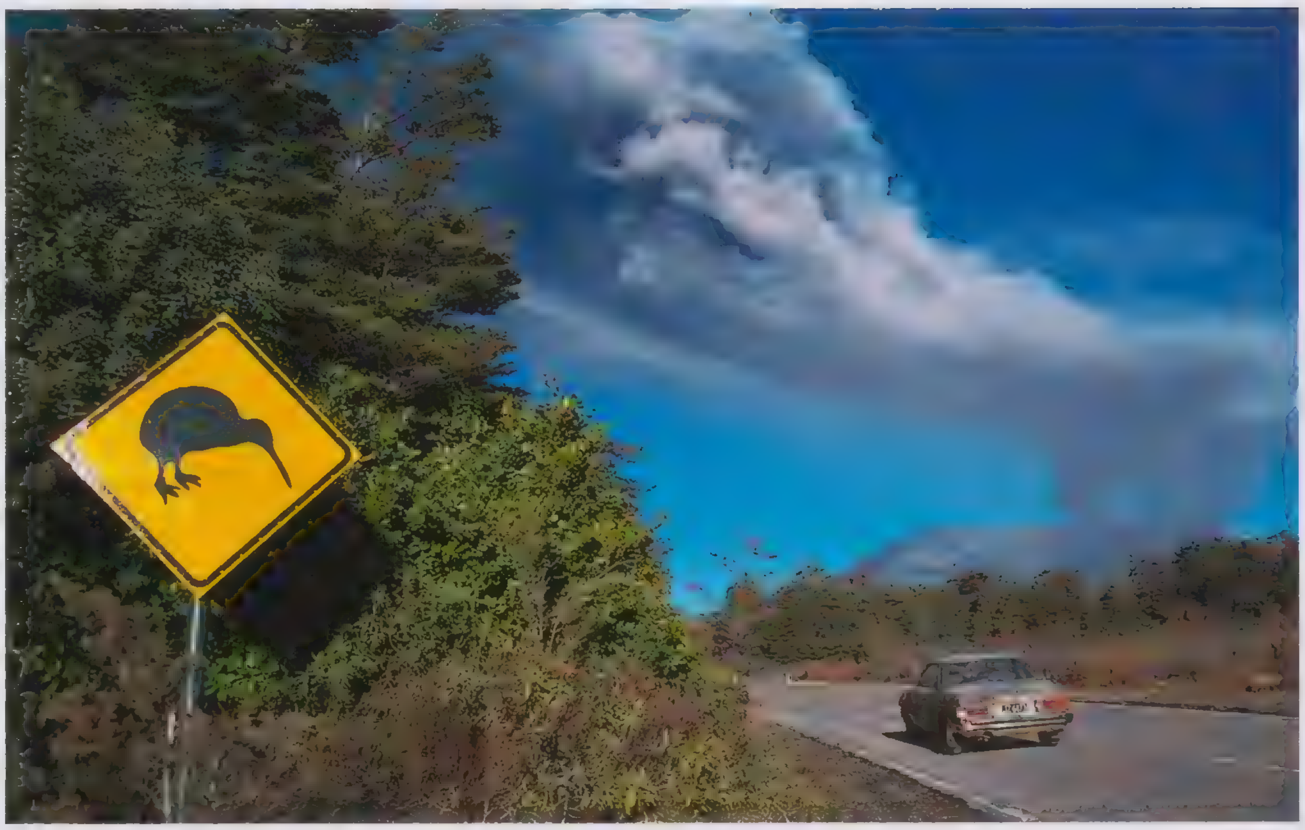

New Zealand's Department of Conservation has put up numerous kiwi warning signs to help motorists avoid colliding with this endangered species, the country's longtime mascot. Mt. Ruapehu, an active volcano at Tongariro National Park, erupts in the background.

glum picture that has emerged is that kiwis, whose numbers may once have been as high as 12 million, are currently down to fewer than 80,000 and dropping fast. Where kiwis were thought to be safe in the vast forests, now only mature birds born before the spread of predators call out in the night, with no young to replace them when they die of old age. In response to this dire predicament, the Department of Conservation, with support from the nongovernment Royal Forest and Bird Society and long-standing sponsorship from the Bank of New Zealand, launched the ambitious Kiwi Recovery Program.

For the Brown Kiwi (*Apteryx mantelli*), the story took on another turn when DNA analysis revealed that what was once regarded as one species with slight population variations actually represents three distinct species, with the southernmost, known as the Southern Brown Kiwi (*Apteryx australis*), possibly yet to undergo more splitting. Moreover, what is now the Okarito Brown Kiwi, or Rowi (*Apteryx rowii*), was found to be down to possibly as few as 200 birds restricted to one 15-square-mile plot of forest. It is a strange little kiwi, more closely related to the North Island browns than to the other brown kiwis living nearby. No real explanation exists for its mysterious ancestry, except perhaps that during the Ice Ages the Okarito Forest was trapped on all sides by massive glaciers descending to the sea, creating a genetically isolated population.

The Okarito Brown Kiwis may be few today, but they are plucky little individualists who don't take kindly to disturbance or threat. They live in the dankest, darkest, rainiest forest ever made; they are highly mobile and may guard huge territories, and will forcibly evict anything or anyone that invades it. Many stories exist of researchers being rushed by enraged, kicking and growling kiwis, or getting whacked in the head as they sit in ambush trying to catch the birds for banding.

The Department of Conservation staff spends virtually every day of the year trudging through torrential rains, up and down rugged forested glacial moraines, and across sphagnum swamps punctuated with giant podocarp trees, checking on the life history of 30-odd pairs of Okarito kiwis. They use radio transmitters to follow their movements and a specially trained "kiwi dog" to locate burrows. During the winter nesting season they check each nest regularly to monitor hatching rates and follow the fate of the young kiwis when they emerge, trying to devise ways to protect them. But the story is not always a happy one. Even with radio tracking, remote camera surveillance, and intensive trapping of both possums and stoats, almost all of the kiwi chicks perish in their first three months of life. Better success has been achieved with chicks raised in captivity until they are larger and stand a better chance of defending themselves.

More than a century after the kiwi was first afforded protection, the final pieces of the puzzle are just beginning to fall into place, and the immensity of the challenge is only now being revealed. In the Okarito Forest I was privileged to photograph a young chick on its first exploratory forays from the nest, one of the few that—as luck would have it—was to survive to adulthood. Fiercely independent even at less than two weeks old, he already avoided his parents, even though he still returned to their nesting burrow for warmth. "All wired and streetwise" as one of the researchers put it, though not often streetwise enough to confront the wily alien predators that now stalk its native forest. Thanks to its radio transmitter I could spy on its daytime snufflings deep underneath mossy fallen logs, and watch it come and go from its parent's burrow at night. It will take a lot of help from the human Kiwis to give the world's strangest bird a fighting chance to survive the modern world, but New Zealanders are determined to make it happen. ■

Tui De Roy and partner Mark Jones travel the world, documenting wildlife and their habitats with their cameras. They are based in New Zealand.

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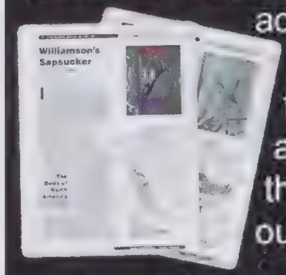

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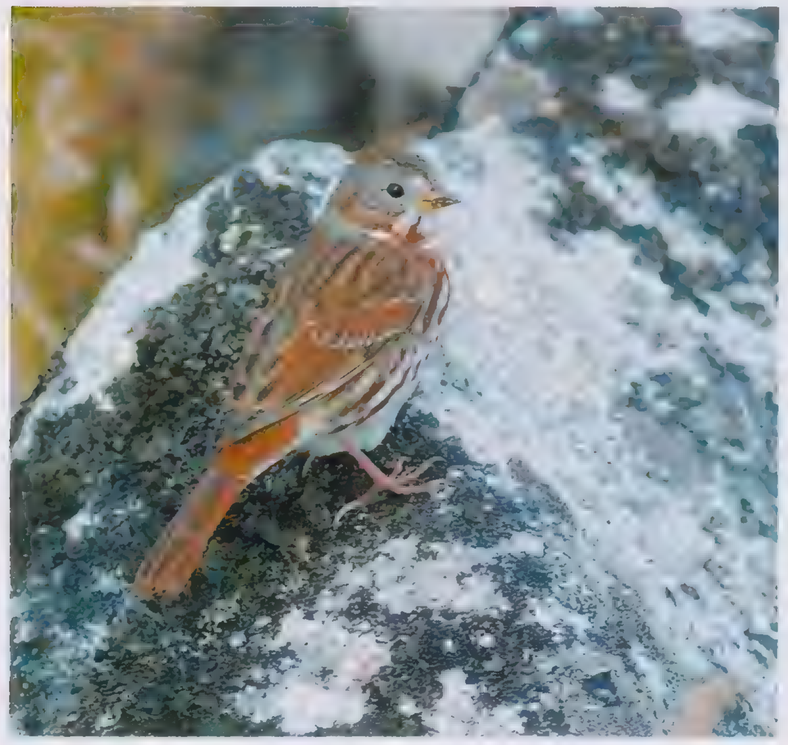
Birding in Old Beringia

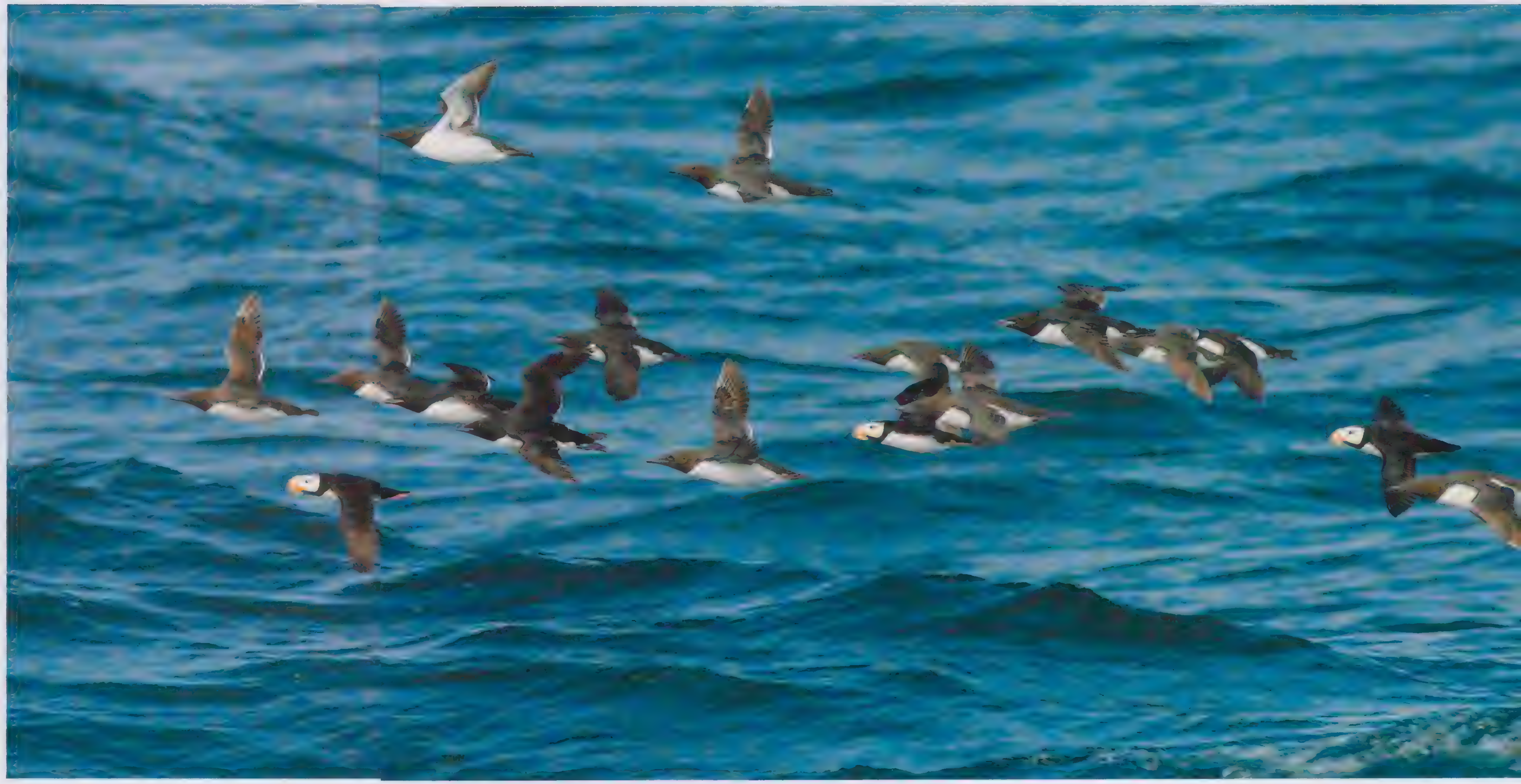
A guide to St. Lawrence Island, Alaska

TEXT AND PHOTOGRAPHS BY BRIAN L. SULLIVAN

As I unloaded my bags and camera gear at the Sivuqaq Inn at Gambell, Alaska, Paul Lehman stood at the window and parted the curtains, staring out to the north. "Look offshore," he said, "It's already starting." I lifted my binoculars, and through the Plexiglas lodge window could make out tight flocks of hundreds of alcids moving south past "the point," appearing as veritable clouds of birds across the horizon. I immediately stopped the task at hand and ran to the point, where a spectacle unlike anything I had seen before was quietly unfolding.

It was about noon on August 26, and, as on every other summer day at Gambell, hundreds of thousands of alcids of many species were returning to their breeding colonies near the southern end of St. Lawrence Island from their offshore feeding grounds to the north. I sat transfixed as flocks darkened the horizon, flying from just above the ocean surface to as high as 30 meters. Life bird after life bird came and went. Lehman skillfully sorted through the masses to pick out the less common





Gambell is an excellent place to find vagrant land birds from both Asia and North America. The Red Fox Sparrow (Passerella iliaca zaboria)*, at left, is a rare visitor to Gambell during fall, recorded just five times. This individual was photographed on September 6, 2004. The afternoon flight of alcids past the northwestern tip of St. Lawrence Island is unrivaled. Up to a million birds can be seen in a day, the bulk of which are Crested Auklets. Above, a flock of Common and Thick-billed murres—the former are browner and slimmer; the latter blackish and stocky—and several Horned Puffins.*

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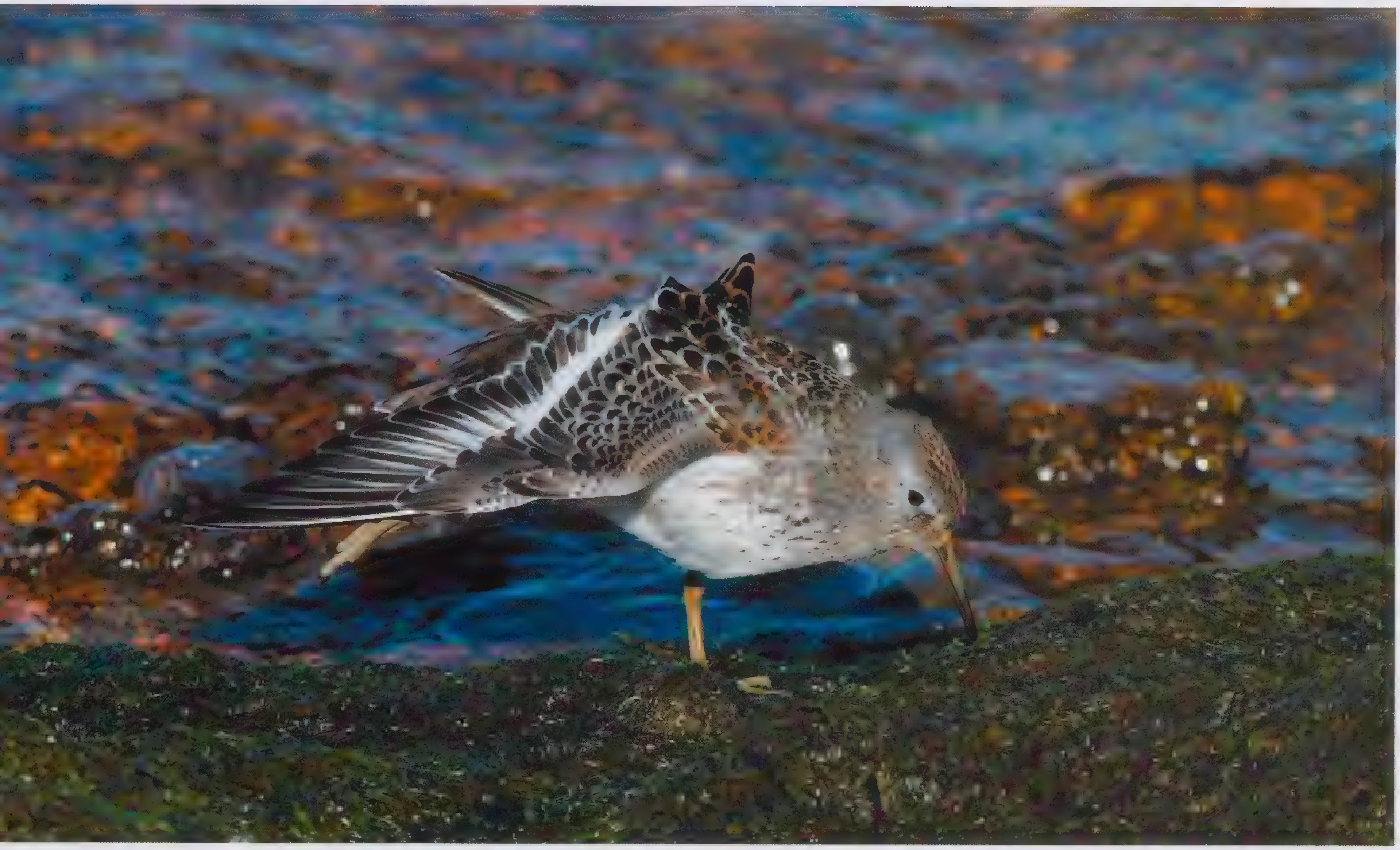


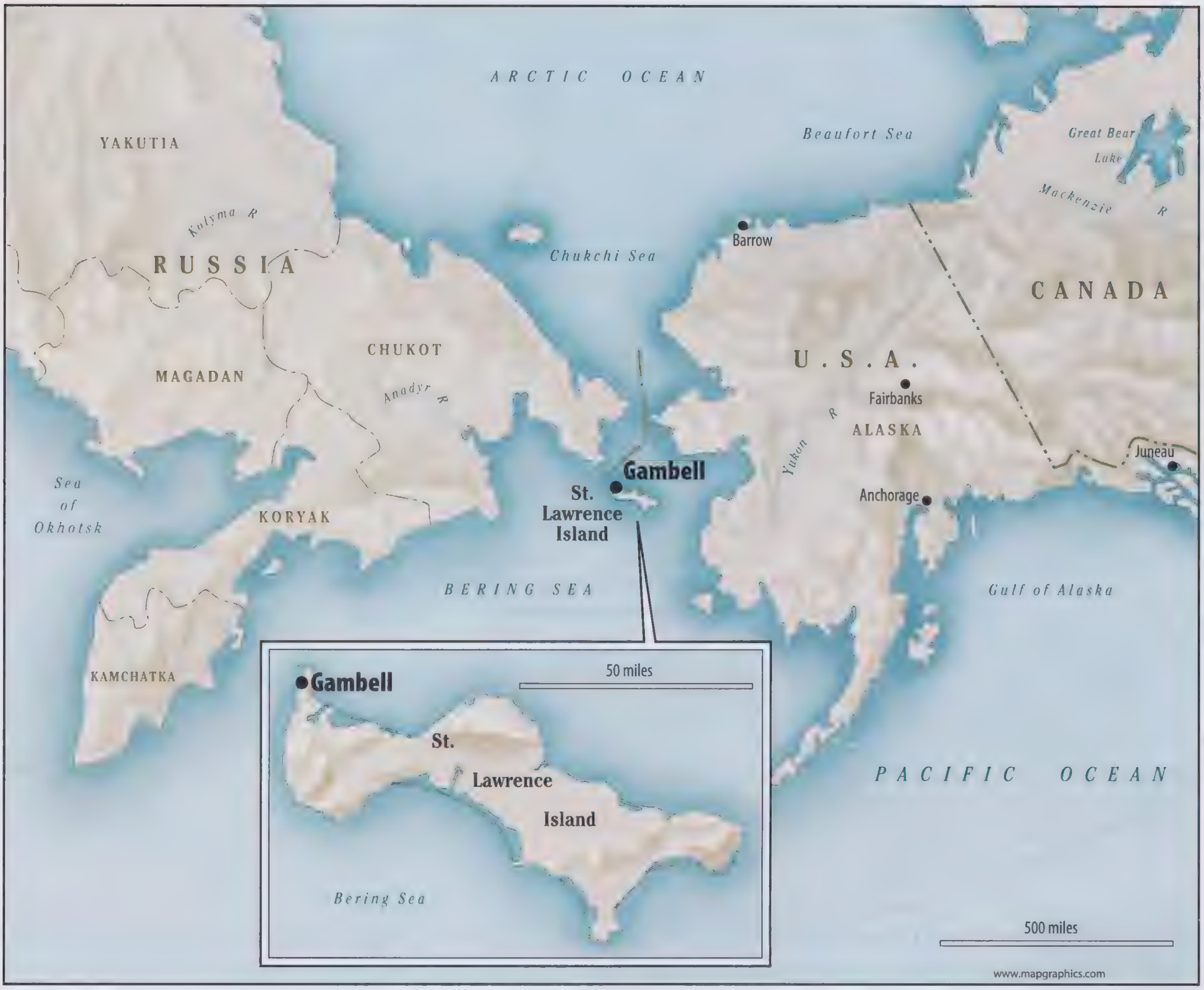
Four subspecies of Rock Sandpiper exist in North America. This juvenile (above), photographed on August 26, 2004, is of the St. Lawrence Island population (Calidris ptilocnemis tschuktschorum)*, which also nests in northeastern Russia. The Gray-tailed Tattler (right) is a true Asian specialty, found annually at Gambell where it outnumbers the Wandering Tattler, common along the Pacific Coast of North America. Juveniles are distinguished by their more boldly marked upperparts (pale fringes and spots) and distinctive plover-like flight call.*

species, while I was happy simply to enjoy the parade.

Crested Auklets made up the bulk of the birds; an observer can easily tally several hundred thousand passing the point on a typical August afternoon. Common and Thick-billed murres moved past by the thousands, allowing close observation of their plumage subtleties. I also saw many Least and Parakeet auklets, the former low-flying balls of black-and-white fluff, the latter strikingly stocky, white-bellied and orange-billed. Add to this spectacle a few hundred Horned and Tufted puffins, dozens of King Eiders, and an odd Yellow-billed Loon, and it's little wonder that this event has been described as the premier sea-watching event on the planet.

The excitement at Gambell only begins with the sea-watching, because its true allure to birders lies in its propensity for attracting vagrant landbirds from far-flung locations—especially Asia. Every late spring and early fall, groups of birders visit Gambell in hopes of glimpsing vagrant Asian landbirds rarely recorded elsewhere in North America. In addition to the rarities, Gambell gives birders a chance to observe many species of breeding and migrant birds that are very difficult to see elsewhere.

As you fly into Gambell, it quickly becomes apparent why so many rare birds turn up in this unique location. St. Lawrence Island is in the center of what was once Beringia—the land bridge that historically connected Asia to North America with more than 1,000 miles of grassland steppe habitat. The land bridge allowed an exchange of flora and fauna between the two continents—including the arrival of humans in North America. As sea levels again rose, Beringia was largely covered by water,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St. Lawrence Island is a remnant of the ancient land bridge that once joined Asia and North America, allowing an exchange of plants and animals between the two continents. The migratory patterns established thousands of years ago by birds crossing the land bridge have stayed the same—only now the birds must cross hundreds of miles of open water.

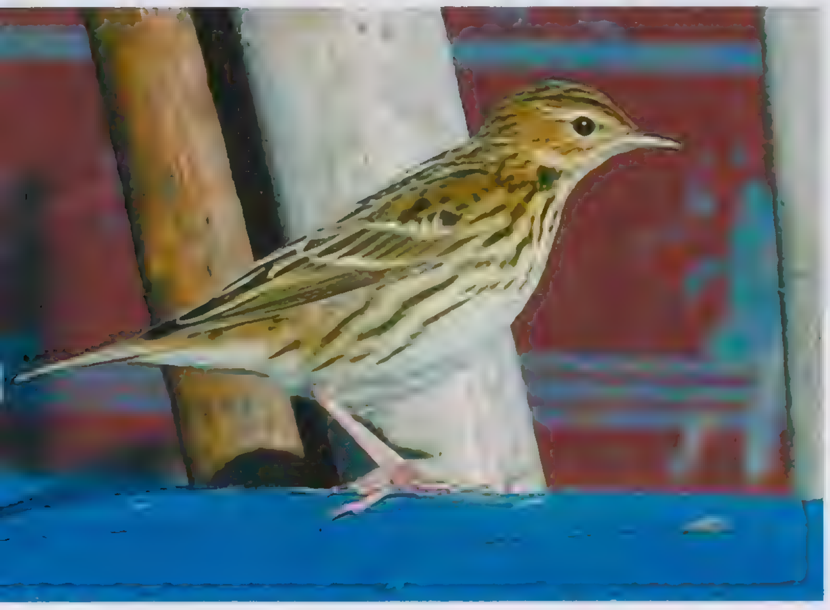
with the exception of St. Lawrence Island, which at roughly 70 miles long and 10 miles wide contains mostly marshy wetlands, tundra, and little solid ground. The rocky slopes of its high ground house some of the largest alcid breeding colonies in North America. Its geography makes it a natural place for finding vagrant landbirds. The migratory patterns of the birds involved in the range expansions allowed by the Beringian land bridge have stayed the same. Thus many species now have to cross hundreds of miles of open water to remain on their historic migratory pathways.

In addition to these "trans-Beringian" migrants, wayward landbirds from elsewhere on each continent often end up at Gambell. When disoriented individuals migrate north instead of south, west instead of east, or, most interestingly, east instead of west, they find themselves in the middle of the Bering Sea, with few options for foraging. The "boneyards" of Gambell, native Yupik middens where walrus and bowhead whale remains were deposited, are veritable oases in an otherwise inhospitable rocky, gravel desert. A type of artemisia, locally called wormwood, grows here and provides much-needed shelter and foraging resources for tired migrants.

Birding at Gambell can be some of the most exciting in North America, and nowhere else is the relationship between migratory birds and weather so apparent. When easterly winds prevail, Old World landbirds breeding in eastern Alaska make their way back to Asia via Gambell. Under these conditions, numbers of hard-to-see Alaska specialties can be common there—including Yellow Wagtail, Northern Wheatear, and Bluethroat. These species reach the eastern end of the breeding ranges in western Alaska, and cross the Bering Sea on their ancient migratory routes leading back to wintering grounds in Asia and even as far off as Africa.

Also of interest are many vagrant North

American birds, presumably disoriented and off course, which end up taking refuge at Gambell after migrating long distances on the east or southeast winds. Examples include wayward Swainson's Thrushes, Nashville Warblers, and Bullock's Orioles—any of which would be truly exceptional finds on the Asian continent.



Only seven Pechora Pipits (above) have been recorded at Gambell—the only fall records for North America. You won't see any cars at Gambell (below). People use primarily all-terrain vehicles to get around.

The real gems for North American birders show up during westerly winds. When low-pressure systems tracking from west to east displace birds in their paths, many wayward Asian species have been recorded at Gambell. Birders travel to the Gambell boneyards in search of a quick glimpse of species such as Middendorff's Grasshopper-Warbler, Dusky Warbler, and Little Bunting. Gambell has produced many North American firsts during the past 10 years, largely thanks to the determination of Paul Lehman, who has pioneered the fall birding season at Gambell. His discoveries include the first North American records of Willow Warbler, Yellow-browed Warbler, and Lesser Whitethroat—the latter a first record for the genus *Silvia* in the New World.

Many unusual shorebirds are encountered in the marshy areas surrounding Gambell. Eurasian Dotterels reportedly breed atop Sivuqaq Mountain, and you are likely to encounter several sought-after Asian species, including Lesser Sand-Plover, Sharp-tailed Sandpiper, and Gray-tailed Tattler. Views of the resident breeding subspecies of Rock Sandpiper (*Calidris ptilocnemis tschuktschorum*) can be spectacular, and birders are delighted by their interactions with this north-coast specialty.

Guided tours are available through several birding tour companies. I encourage birders to take advantage of expert guides when visiting the area. The native Yupik Eskimos own all of the land at Gambell and charge $50 for a land-crossing permit to walk to areas around town and in the nearby boneyards. Permits are available on arrival. Guests can typically be accommodated at the Sivoqaq Inn, but during the peak birding seasons during spring and fall, space is limited so it is wise to book a room well in advance of your trip.

For birders, Gambell offers an experience like no other. Sitting on a rocky shoreline watching hundreds of thousands of birds move past as a variety of whales feed just offshore—all stretching across the backdrop of the snow-covered, cotton-candy-pink mountains of eastern Russia—has left me with remarkably vivid memories and the desire to return and see it all again as soon as I can. ■

Brian L. Sullivan is project leader of eBird at the Cornell Laboratory of Ornithology.

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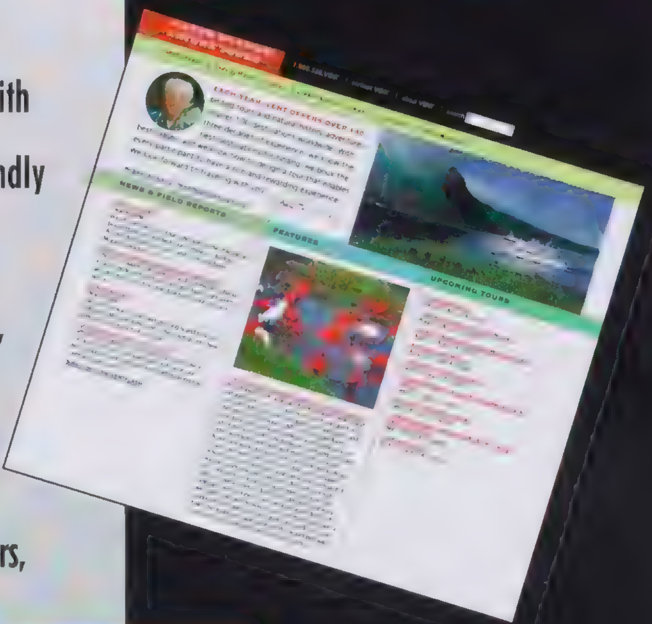

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- 30 year guarantee

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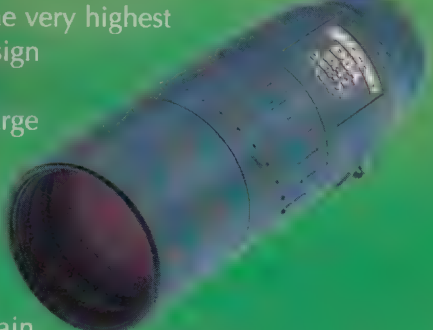

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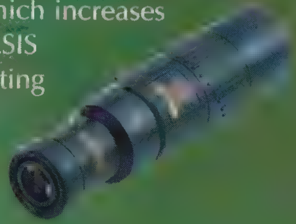

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The Return of the Native

Bringing the Great Bustard back to the grasslands of Britain

BY J. C. ROLAND

Imagine strolling onto the breezy Wiltshire downlands of southern England on a fine brisk morning in spring. Suddenly, from the lush grasses carpeting the thin, chalky soil, you hear a strange sound, a throbbing *ummmb, ummmb*. Curious, you approach and witness an astonishing sight. Two gigantic birds—each, at up to four feet in height, as tall as a roe deer—are strutting in a clearing, their heads thrown back. The throbbing noise emanates from large, inflated pouches on their throats. At first glance, they look like huge game birds. Pale blue-gray heads and upper necks shade into gleaming copper, and their golden backs and tails are flecked and barred with black. Perhaps their most striking features are the white beards of feathers, at least six inches long, bristling from below their dark, curved beaks. You watch, fascinated, as the big male rivals circle one another. And then something even weirder happens:

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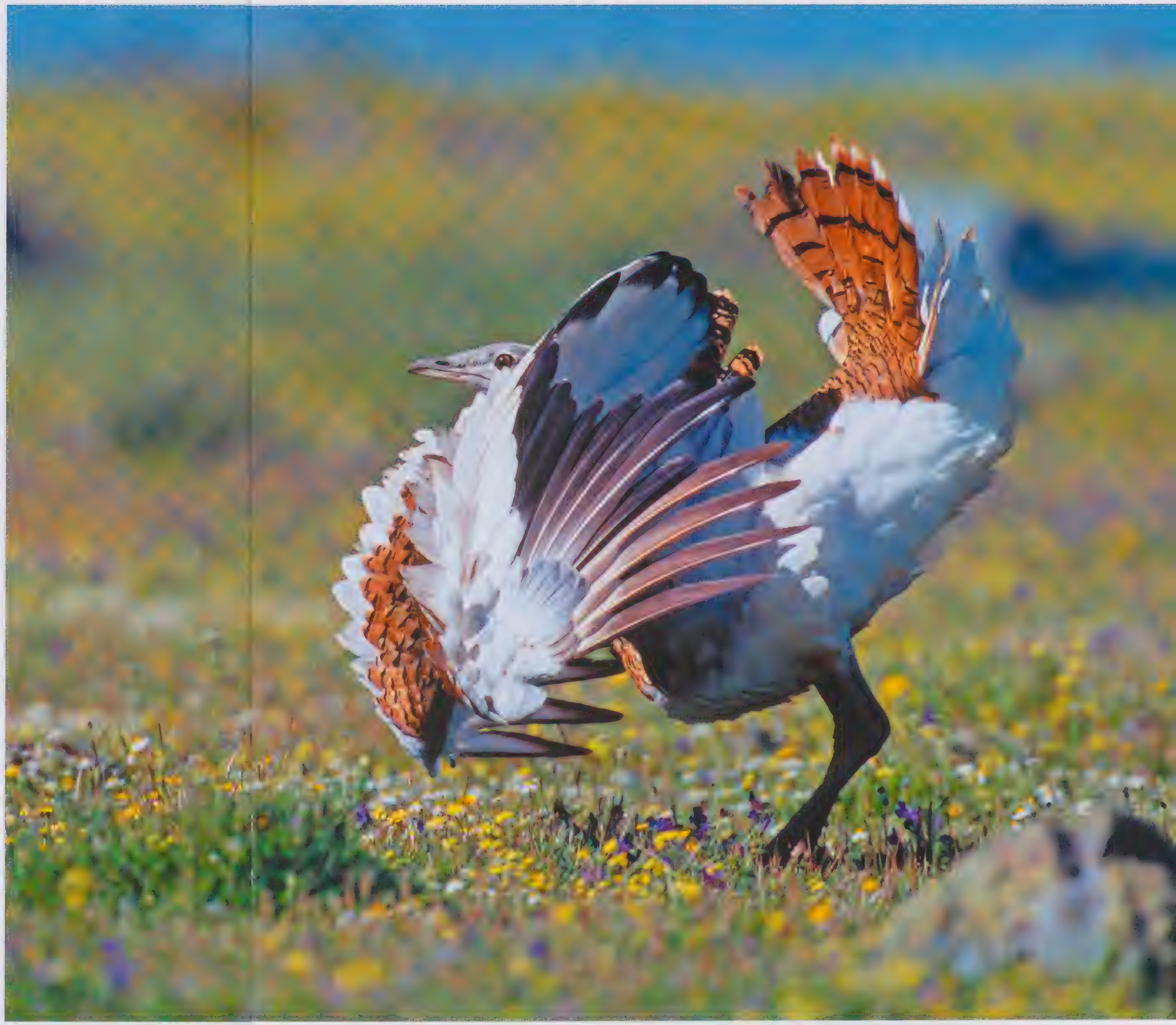

The spectacular Great Bustard was extirpated from the British Isles in the mid-19th century. But if a reintroduction plan succeeds, birders will once again see displaying bustards (like the birds shown here in Spain) in the grasslands of southern England.

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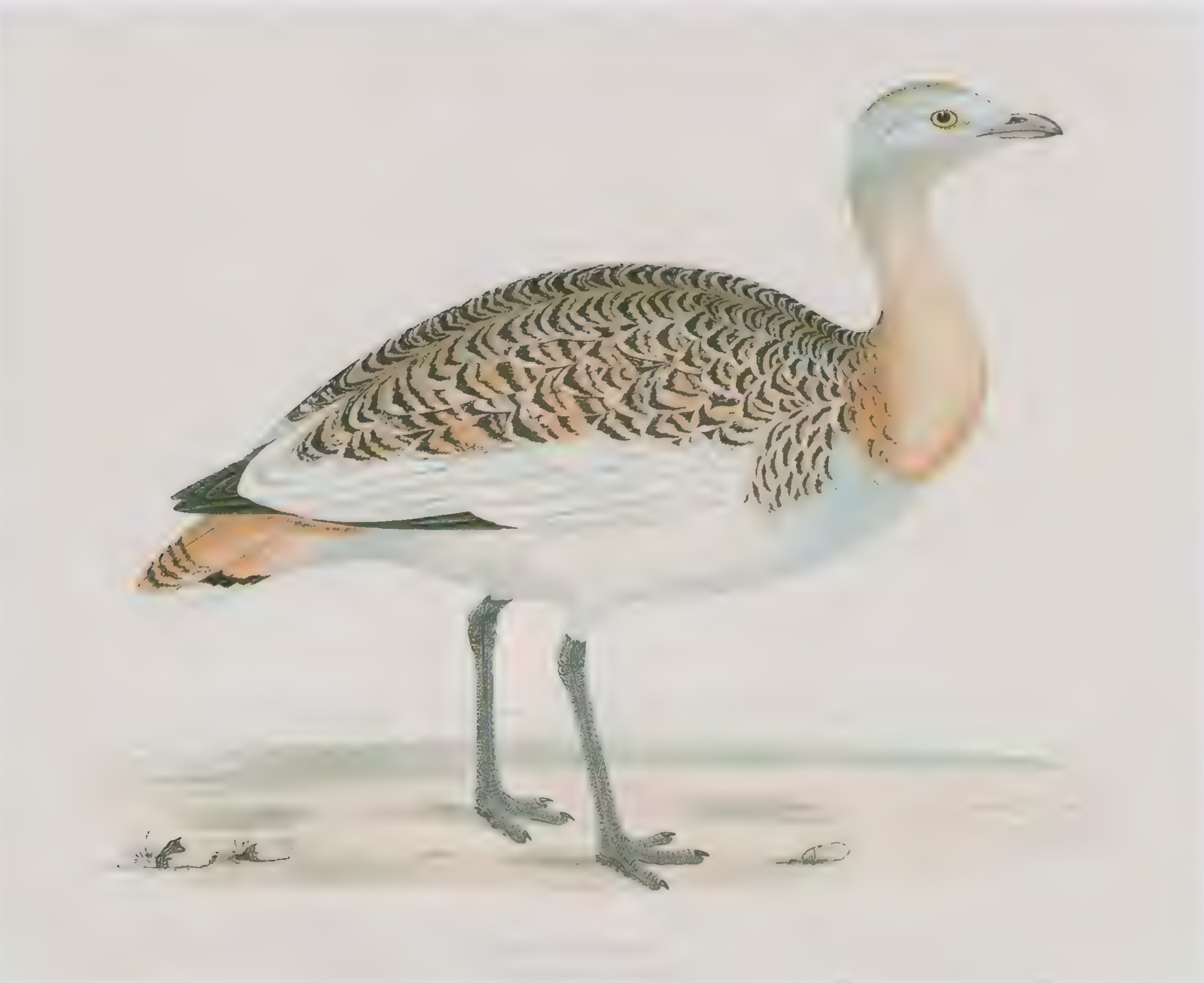

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they appear to be turning themselves inside out. Each fluffs up and twists the outer cover of its wings forward, revealing white inner feathers; then the wings droop almost to the ground, and the tail arches toward the head, flashing more white. Finally, the beard rises straight up, almost before the bird's eyes. In this extraordinary pose, it resembles an enormous powder puff.

For now, this bizarre sight must remain a figment of our imaginations. No one now living has seen this display performed anywhere in Britain, because the magnificent bird that performs it, the Great Bustard, was extirpated from there about 130 years ago.

The exciting news is that we may yet be able to marvel at the birds' strange "balloon display" in our lifetimes, because this immense bird, and its near relatives, have survived elsewhere. And now, Great Bustards from the Russian steppes are being reintroduced to the wide and windy grasslands of Britain's Salisbury Plain.

According to the Great Bustard Group, a Wiltshire-based consortium working with the University of Stirling and the Department for Environmental, Food, and Rural Affairs (DEFRA) to reintroduce the species in Britain, the Salisbury Plain would provide ideal habitat for these birds. Some 94,000 acres (38,000 hectares) in size, the plain is a mixture of arable farms and calcareous grassland, offering seclusion and ample food for bustards. Also, for nearly

J. C. ROLAND

This 19th-century illustration of a Great Bustard (above) by Benjamin Fawcett appeared in Beverley Robinson Morris's British Game Birds and Wildfowl, *published in 1855, not long before the species was extirpated from Britain. David Waters (at right), chairman of Britain's Great Bustard Group visits a Salisbury Plain hide (or blind) on a private farm. The hide overlooks a fenced-in field planted with kale, millet, and other grain, where the birds were released.*

J. C. ROLAND

The vast grasslands of the Salisbury Plain (above) will once again host Great Bustards. The birds were extirpated from Britain in the 19th century by people who killed them for their meat or took their eggs.

a century, the plains have been the British Army's main training area; live artillery and unexploded shells understandably discourage public access and keep the human impact low, thus providing a real haven for rare or vulnerable flora and fauna.

The Great Bustard certainly needs all the protection it can get. Worldwide, its numbers have long been in decline. Today, only patchy colonies survive across Europe and Asia, with the largest in Spain, Russia, and China.

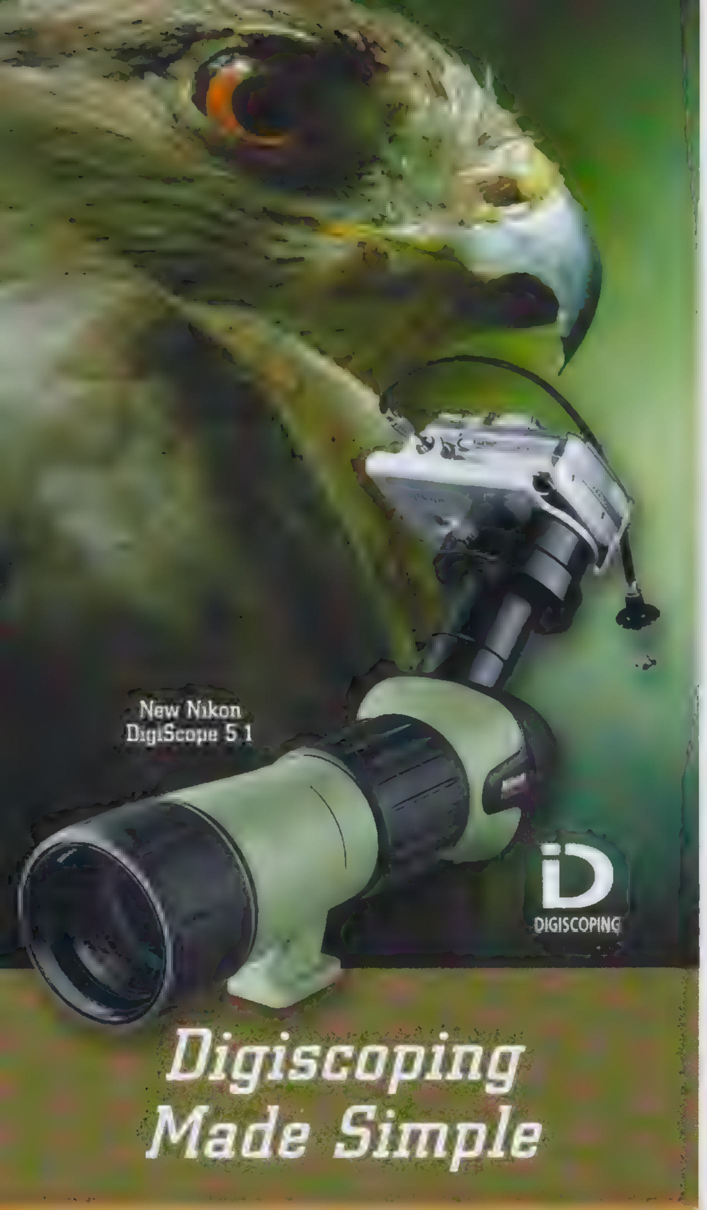
The birds' chances for survival are not enhanced by their habit of nesting on arable farms. As naturalist Richard Lydekker wrote, "In the second half of May, when she can hide herself in the young crop, the hen makes her nest; that is to say, scratches a hole, which is sometimes hidden with dry stalks." The Great Bustard is big, but no match for tractors or combine harvesters. And its sheer weight (up to 45 pounds) makes takeoff a slow, ponderous affair, as its scientific name, *Otis tarda*, implies.

Country folk seeking meat for the pot have always seized opportunities where they could find them. English peasants prized the olive green or drab brown, spotted eggs of these birds. Medieval records show that nobles paid up to 10 silver shillings for a Great Bustard, and it was the piece de resistance for centuries at the Mayor of Salisbury's annual feast. In the early 19th century, the birds were the quarry of choice for huntsmen who sent packs of greyhounds in pursuit. Despite its size, a Great Bustard can outrun hounds in a straight sprint, but when chased back and forth, it eventually drops from exhaustion.

One of the last British encounters was recorded by Wiltshire resident Henry Blackmore in 1856: "A little boy found (a Great Bustard) with its leg broken by the side of a field of turnips, near Hungerford. . . . As the bird was fluttering, he seized one of the wings and dragged it nearly a quarter of a mile, until he reached a barn, in which some men were at dinner, one of whom killed it by breaking its neck."

Other factors make *Otis tarda* vulnerable. It is slow to breed and never lays more than three eggs in a season; these take 30 to 35 days to hatch, and rather than running from danger the chicks often freeze. What's more, the birds are acutely averse to human contact. As that keen 18th-century observer of birds Thomas Bewick wrote of the Great Bustard hen, "She sometimes leaves her eggs in quest of food; and if, during her absence, anyone should handle them, or even breathe upon them, she immediately abandons them."

This extreme sensitivity poses all sorts of problems to reintroducing the species. How can well-meaning humans intervene to help this



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GREAT BUSTARD FACTS

The Great Bustard (*Otis tarda*) and a subspecies (*Otis tarda dybowskii*) can be found in patchy flocks from Portugal in the west to China and Mongolia in the east, and from Morocco in the south to Sweden in the north. Their numbers are declining worldwide due to hunting, egg collecting, intensive agriculture, and loss of habitat. The bird was extirpated as a breeding species in Britain during the 1830s, although lone vagrants were seen until the 1870s.

Great Bustards have only three toes, all pointing forward, so they cannot perch. Their nests are shallow depressions scraped into the ground. Their diet includes insects, buds, tender shoots, seeds, amphibians, and small mammals such as voles. Although they resemble gallinaceous birds, Great Bustards are more closely related to cranes. Males can be as tall as an adult roe deer and can run as fast as a hound for short distances. Wingspans of up to 97.5 inches have been recorded in Great Bustards. Females average from 7 to 10 pounds in weight. Males have been known to reach 45 pounds, ranking them among the world's heaviest flying birds.

For more information, contact: David Waters, Chairman, The Great Bustard Group, Garden Cottage, Clarendon Park, Salisbury, Wiltshire, SP5 3EP; email: <Enquiries@greatbustard.com>.

bird if their scent, touch, or presence inhibits its survival in the wild?

Answers are emerging from studies by scientists at the Institute of Ecology in Saratov, Russia. In cooperation with local farmers, Anatoly Khrustov and his team have been rescuing Great Bustard eggs and hand-rearing chicks for several years. Between 5,000 and 6,000 birds have already been saved, but most of them were given to zoos or animal parks, because they knew only human "parents" and therefore had no way of learning the skills they would need to survive in the wild. But now, joint research undertaken by the Russian Institute and the Great Bustard Group in Britain has produced an isolation rearing technique.

The founder of the United Kingdom initiative, former policeman David Waters, explains: "Chicks are reared without regular human contact. They need to be taught how to feed, and this is done using a glove puppet with an artificial bill. Humans are disguised in special costumes that we make ourselves. If the chicks imprint on these, it shouldn't compromise their ability to survive in the wild, because they will not see anything like them once they are released."

In August 2004, David flew back to England with the first batch of about 40 chicks from Russia; more will be hatched and brought there annually for at least a decade. According to Patrick Osborne of Stirling University, lead scientific partner in the reintroduction effort, "Our objective is to bring over 200 birds—enough to establish a permanent population in the long term."

Initially, chicks will spend a month in quarantine, then be acclimatized to the English weather before being set free in a carefully chosen (and protected) part of Salisbury Plain. It appears that the new Russian immigrants are quite closely related to the original British stock of Great Bustards, whereas other alternatives, such as the Spanish colony, long marooned by the Pyrenees, took a divergent genetic path.

This gentle giant will owe its renaissance in Britain to the combined efforts of farmers, scientists, politicians, soldiers, and glove puppets. It sounds almost like the ending to a fairy tale—or perhaps the plot of a Russian ballet—that this almost mythical creature, familiar to most Britons only as an image on a Girl Guide's badge or the Wiltshire county crest, should be both real and actually living among them once again. ■

J. C. Roland is a freelance writer based in the United Kingdom.

BIRDING JOURNAL #209
Nikon FIELDSCOPE ED

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Hummingbird (Violet Sabrewing Hummingbird)

Yoshiharu Ishimaru is a pioneer in the world of digiscoping and founder of Digisco.com

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Jerry Liguori

Foreword by David Allen Sibley

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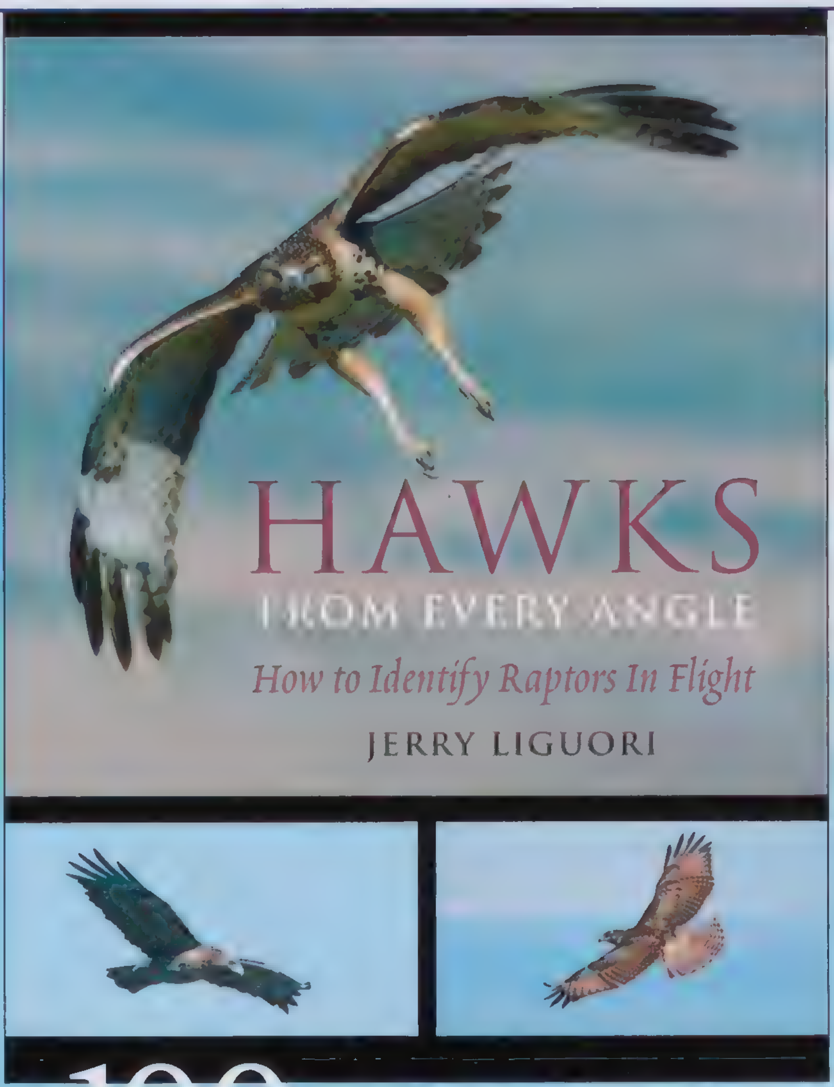

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LISTEN UP

by Jack Connor

Around the globe, birds are always singing somewhere

If you live east of the Rockies and south of the Canada border—in other words, anywhere within the range of the Northern Cardinal—I am willing to bet I can name a little blank on your birder's resume. You might even be willing to admit it's an embarrassing gap, a box you could have and should have checked off years ago in your own backyard. In fact, with a little determination and luck, you might have checked it off this morning. But you didn't, did you? In fact, you have never gotten around to paying sufficient attention, have you?

You have never seen a female cardinal sing.

Welcome to the club! Cardinals nest in my yard every year, sometimes a couple of pairs. I've watched courtship feeding, nest-building, copulation, territorial disputes, incubation, and feeding of the young (by both sexes) in and out of the nest. I have also admired the cardinal's loud and unmistakable song for as long as I have known it. His is generally the first song to reach me through the bedroom windows just before dawn most mornings from early March through midsummer: *wheat-cheer-wheat-cheer . . . wheat-wheat-cheer-cheer-cheer!* On those few mornings when I stop to notice, it's a delightful way to start the day.

And yes, I know the books say the females sing too. I have often told people that. Clearing my throat, adopting my professorial voice, I have announced to one group of beginners or another, "Birdsong is primarily a male behavior, generally intended to intimidate males and to attract females. In a handful of species, however—Carolina Wren, Rose-breasted Grosbeak, and Northern Cardinal, for example—females also sing. This is something of a behavioral puzzle because . . . yadda, yadda, yadda."

Luckily, no one has ever interrupted to ask, "But have you yourself ever actually witnessed any female cardinals singing with your own ears?"

Don't tell my friends. I have missed it year after year—probably for the same reasons you have. We are visually oriented creatures, you and I. We believe and appreciate best what we can see. Birds originally attracted us because they are eye-catching and colorful, and a pleasure to watch. Only musically adept birders listen to birds as carefully as they look at them. And let's admit it, you and I: we are not musically adept. For most birders like us, the calls and songs of birds fall a distant second to their visual appeal.

Therefore, you may be interested in the rehabilitation program I have designed and tested for birders just like us.

Step 1. Go to the bookstore and pick up two enlightening and engaging new books published nearly simultaneously, Don Stap's *Birdsong: A Natural History* (Scribner, 2005) and Donald Kroodsma's *The Singing Life of Birds: The Art & Science of Listening to Birdsong* (Houghton Mifflin, 2005). And yes, you need both.

Step 2. Before reading either, reach to the inside back cover of Kroodsma's book, pluck out the CD of bird sounds you'll find there, and slide it into the nearest player.

Step 3. Turn it on and listen. Play it the whole way through.

Step 4. Listen some more. Play it again, all the way to the end. Close your eyes and keep them closed. Tie a bandana around your eyes if you must. Give the knocks, chips, squeaks, whistles, shrieks, hoots, yodels, and rat-a-tat-tats your full attention. And no fair peeking at Kroodsma's 30-page appendix where he identifies and analyzes each track in thorough detail. Save that for later. The CD itself lacks any verbal commentary, an arrangement that has several positive effects. Listening to more than an hour of pure bird sound (interrupted only by a brief track of Kroodsma's baby daughter babbling) is more like the real-world experience of listening outdoors. Outdoors in the wild no narrator's voice intones, "Next, here's the song of the White-throated Sparrow." Out in the real world bird sounds come direct to the ears, without interpretation.

You'll recognize some of the sounds without help, of course—heck, even I recognized some of the songs and calls: American Robin, Black-capped Chickadee, Wood Thrush, Whip-poor-will, Blue Jay, Northern Cardinal.

Only an expert ear-birder could possibly identify them all (Bachman's Sparrow? Three-wattled Bellbird? Sooty Shearwater?). But somewhere in that long series of sounds, perhaps even among the most familiar of sounds—*oh, sweet Canada . . . chick-a-dee-dee-dee . . . peter-peter-peter . . . witchity-witchity-witch . . . tea-kettle-tea-kettle-tea . . . what-cheer-cheer-cheer-cheer*—you might have a little epiphany. You might stop trying to identify this species or that and start thinking on a different level. What is this collection of noises all about? Wouldn't even a Martian recognize that some kind of communication is going on here? And wouldn't even a Martian want to know what is being said? These are Earthlings talking! The sounds of our fellow passengers on this planet bubble up around us every day of the year, but too often we ignore them. Once a year on the

Christmas count we might go out in search of owl calls, but how many other days have you woken up early to go out in acoustic pursuit of birds? For a few, short weeks in spring we might use our ears again to identify migratory songbirds, then possibly once or twice in fall we might consciously listen for the call of a Bobolink or Dickcissel passing overhead. For the rest of the year, however, most of the sounds of birds pass by unnoticed, especially the sounds of the species we hear most regularly.

Step 5. Time to open *Birdsong: A Natural History.* Here, Don Stap, author of the equally wonderful *A Parrot Without a Name,* sketches and celebrates the study of the sounds of birds, from cave paintings in Lascaux, France, and the observations of Aristotle to the 130,000+ recordings currently archived in the Lab of Ornithology's Macaulay Library. Best of all, he sketches the science by narrating several of the acoustic expeditions and investigations Donald Kroodsma has conducted over the past 10 years.

Kroodsma's career-long dedication to the pursuit of bird sounds began on the morning of May 5, 1968, as he listened to a Marsh Wren singing during his last year of college. It has continued for nearly four decades all across North America and down into the tropical forests of Central America and has made him now probably the most accomplished acoustic ornithologist in the world—which makes it especially satisfying that you can close the last page of Don Stap's book and immediately . . .

Step 6. Read *The Singing Life of Birds.* Here you'll need to slow down a little. It's an easy book to skim, filled with anecdotes, puzzles, and Kroodsma's contagious enthusiasm for the sounds of birds ("Although mothers play Mozart to babies in the womb, I think thrushes and wrens and sparrows and a more natural chorus would be at least as effective.") But if you want to employ some of Kroodsma's methodology you'll need to study his approach and his thinking and also sharpen your brain for better listening. Kroodsma advocates counting sequences of songs and taking notes about individual differences and changes in sequences. He also makes a very good case for buying a microphone and parabolic reflector. You may not be ready for that step, but as long as you have a notepad, pen, and digital watch, his book will prepare you to . . .

Have you ever seen a female Northern Cardinal sing? If not, you're not alone.

MARIE READ

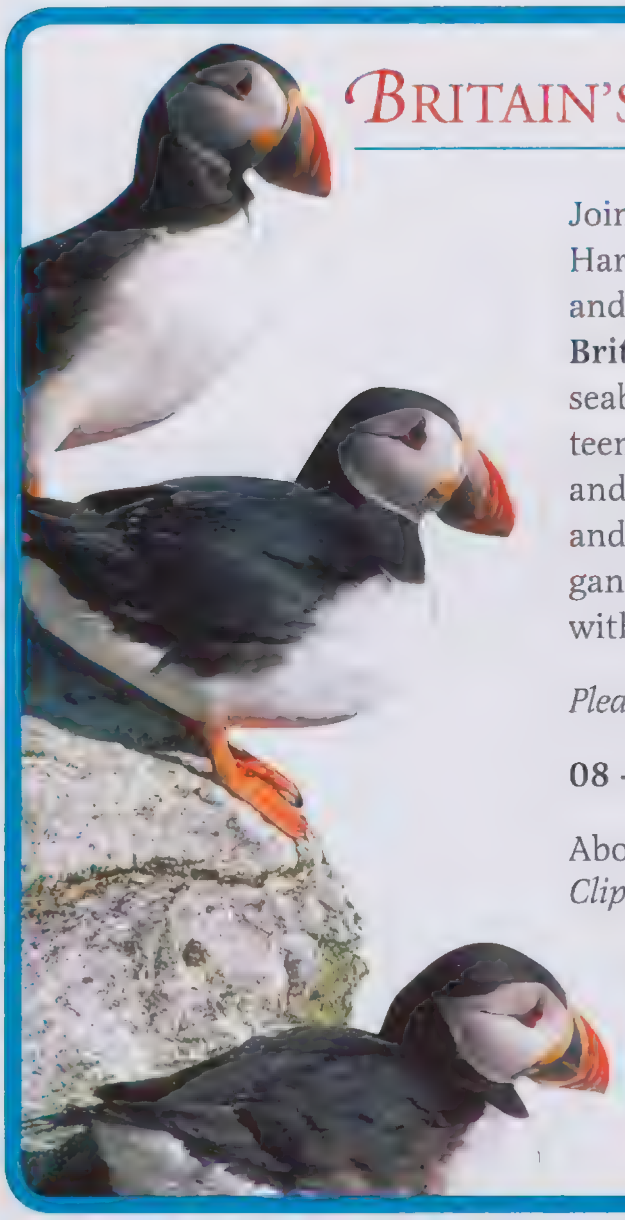
Step 7. Go out the door yourself, predawn, in pursuit of the morning chorus. If it's too dark to see any birds and too early for any to be singing, you are right on time.

No, I didn't hear the song of the female cardinal this spring, at least not consciously, despite several mornings of stumbling around and banging my shins on the backyard furniture. (Question for Kroodsma: are female cardinals discouraged by human observers skipping around on one leg while shouting curse words to the skies?) But I did hear several of the phenomena Stap and Kroodsma describe: repertoire bouts by dueling Northern Mockingbirds, dueting by Carolina Wrens, song exchanges by neighboring cardinals.

So, my quest has been only partially successful so far. But that's okay, because the most important step is the last one:

Step 8. Continue the chase. Maybe the cardinal will sing her song for me tomorrow—or maybe for you. Let's pay better attention, you and I. Let's listen more often to what we can hear.

"Always, somewhere [on the globe], it is dawn," Kroodsma has written, "and always, somewhere, the birds are singing." ■



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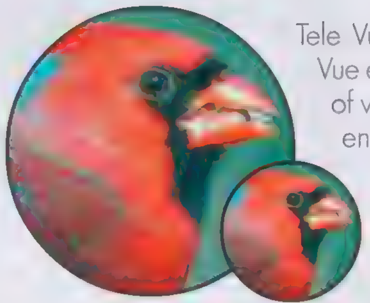

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FIELD TRIP GUIDELINES

by Pete Dunne

One of birding's most cherished traditions is the field trip. The ingredients include one leader, a variable number of leadees, a date, a destination, and lots of birds.

In a previous column, I offered a blueprint for incipient leaders—a list of dos and don'ts that if adhered to would confer upon even a Walter Mitty among birders the semblance (if not the talent) of a Jon Dunn, Rosanna Rowlet, or David Wolf. It proved so successful that it caused an imbalance in the leader/leadee ratio to the point that 10 newly minted (and self-appointed) field-trip leaders were turning up for every participant.

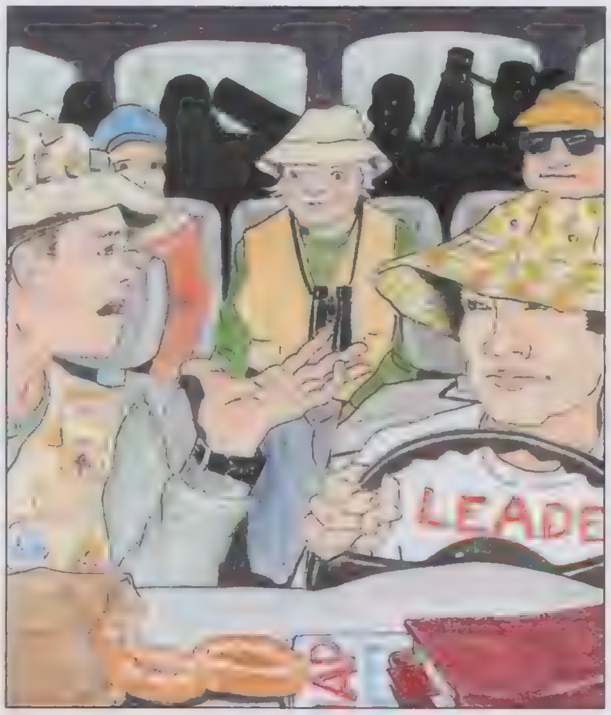
To right this imbalance, I would like to offer a complementing set of guidelines for field-trip participants. Follow them and not only will your standing as the alpha participant be assured, but you will almost certainly get to see more birds than your fellow trip goers.

1. Dress the part. An alpha participant always looks like a birder, even when off-duty (i.e., asleep). Check thrift shops for used Patagonia and L. L. Bean outerwear. If the items are still too expensive, neatly excise the labels with a razor and affix them to knock-off brands. Hats should be floppy, tasteless, and bedecked with no less than 30 bird pins. Jackets should be at least 50 percent covered by bird club and destination patches.

2. Arrive early. Through conversation, learn the leader's favorite bird, birding location, restaurant, binocular model, author, donut topping, and listing software. Use this information to impress other participants and confirm your close relationship with the leader.

3. Ask the leader to let you carry the spotting scope, explaining that you are thinking of purchasing that very model and want to see whether it is light enough. This ensures your position at the head of the line.

4. When birds are spotted, impress other participants by focusing on particulars: "Wow, I've never seen one so neatly patterned before." Phrased this way, it hardly matters that you have, in fact, never seen the species before.



5. Challenge the leader. After a bird has been identified (and everyone else has had a look), give the bird a prolonged scrutiny and intone: "Hmmm. The primary extension seems borderline to me" or "It might just be the light, but I keep catching a touch of red in that eye." After the leader reaffirms the identification, quickly agree and confide that you were momentarily confused by the (choose one): a) Angle. b) Light. c) Spike in the time/space/matter continuum.

6. If you've already seen the species, graciously let everyone else see the bird through the scope first. In the event of a life bird, scream (loudly) that this was the species your mother most wanted to see and that her deathbed wish was for you to see it for her. Shout this while you are cutting in line.

7. When traveling in a 15-passenger van, make known your predisposition to acute carsickness and confide that you had pepperoni pizza (with anchovies) for breakfast. This will ensure that you get the front passenger seat.

8. When traveling in a bus, likewise grab the seat by the door (to better manage the pain associated with your recent hip, knee, and spine replacements). If birding with a friend, have him or her take the seat behind you and act as a blocker to prevent others from beating you to the door.

9. Carry a bag of salted sunflower seeds (they're cheap). When you see someone else snacking on custom trail mix, cashews, macadamia nuts, dried apricots, Swiss chocolate (and other more expensive items), offer them some sunflower seeds and, after they decline, graciously accept their reflexive counter offer. If you bolt the first offered handful down quickly and say "mmmm," you may get a second.

10. When approached by other participants, who, noting your espoused skills, may direct questions to you (since you're monopolizing the leader), quickly intercede on their behalf and engage the leader, explaining that you are just a participant, too. It's the leader's job to be the leader. Sound deferential. ■

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WINTER 2006 VOLUME 25 NUMBER 1

GREETINGS FROM SAPSUCKER WOODS

As I write, it is early December and the woods outside my window lay dusted with snow like a holiday card by Currier and Ives. A minute ago, I looked up and caught a glimpse of an adult Cooper's Hawk dashing swiftly through the trees. It swooped up, landed on a branch, then briefly shook its tail and blasted away to continue its search for prey.

Down south in Arkansas, a different kind of search is underway. Our Ivory-billed Woodpecker team is already there in force, fanning out across the swamps and bottomland forests to find out more about this elusive species—where the birds roost; if and where they are nesting. It's an unbelievably grueling process to scour more than half a million acres of woodlands for a species whose numbers are undoubtedly extremely small.

I went to Arkansas for a few days in early November and got to meet the new fulltime searchers. Many of them were young; all were idealistic and passionate about the Ivory-billed Woodpecker. Their excitement was palpable as they went through the training process and got ready to hit the swamp. They will all stay there for a full six months. I admire their dedication.

The fulltime searchers are being joined by volunteers in groups of 14, each of whom has agreed to spend a minimum of two weeks searching the swamps. These volunteers, who number about 100, were chosen from hundreds of people who contacted us, eager to help with the search.

I'll be going to Arkansas myself late next week, just as soon as I finish the preliminary work on this issue of *Living Bird.* I look forward to it with eager anticipation.

Best wishes to all of you in the year ahead.

Tim Gallagher
Editor-in-Chief

Cover: A Dark-eyed Junco sits out a brief winter snow squall. Nature photographer Cliff Beittel took this intimate portrait in his backyard in York, Pennsylvania.

Right: The nation of Turkey is spectacular, with ancient ruins, stunning seacoasts, lofty mountains, and expansive steppes. It also contains a wide variety of birds, such as this Krueper's Nuthatch, a Turkish specialty. See article on page 14. Photograph by Cagan Hakki Sekercioglu.

Back cover: A juvenile Bald Eagle sits on the snow at Homer Spit, on the south coast of Alaska. Dozens of these birds gather there in winter to feed on fish. Photograph by Cliff Beittel.

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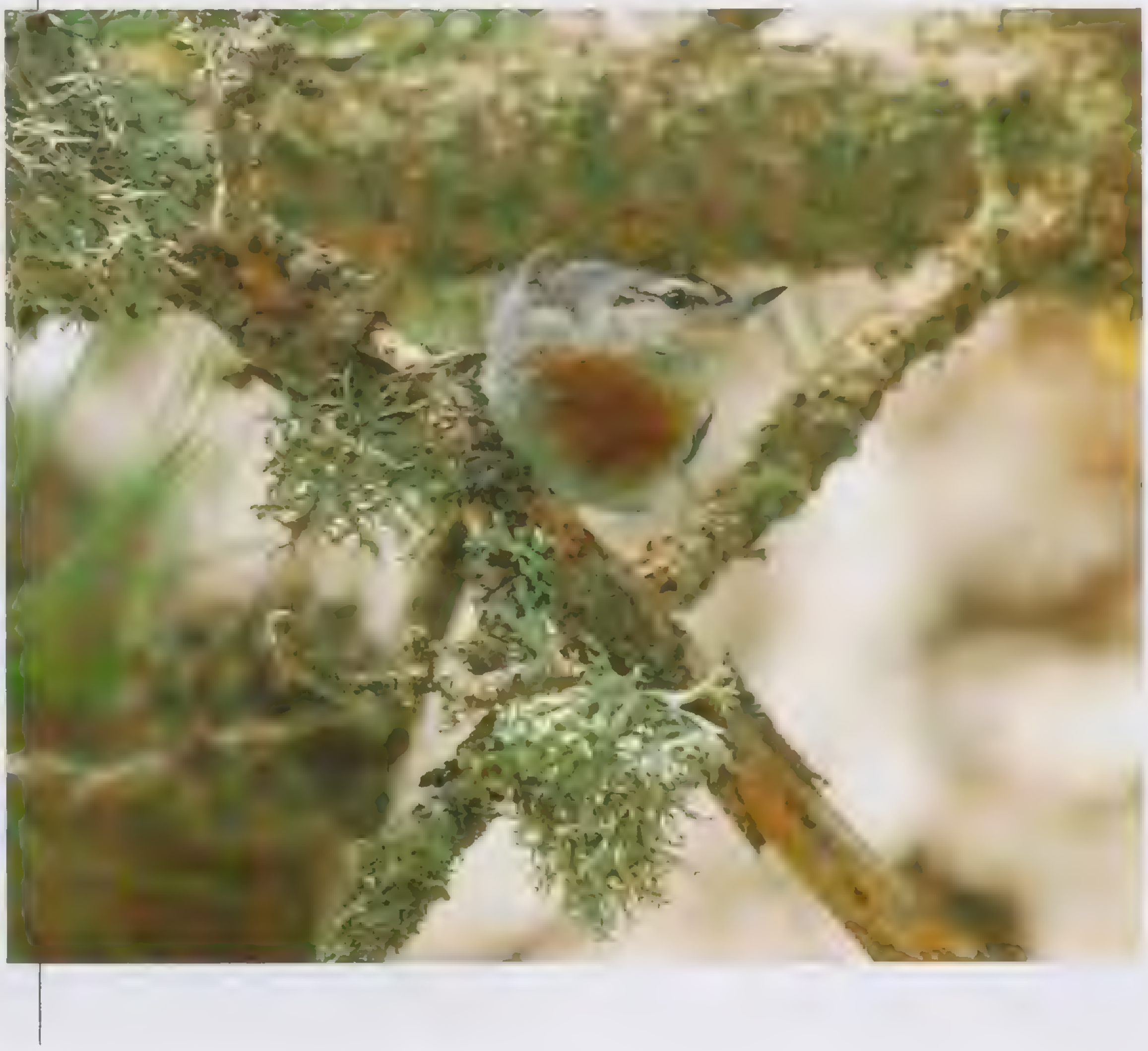
46 THE CATBIRD SEAT *by Pete Dunne*
Why there are birds.



LIVING BIRD

WINTER 2006 VOLUME 25 NUMBER 1

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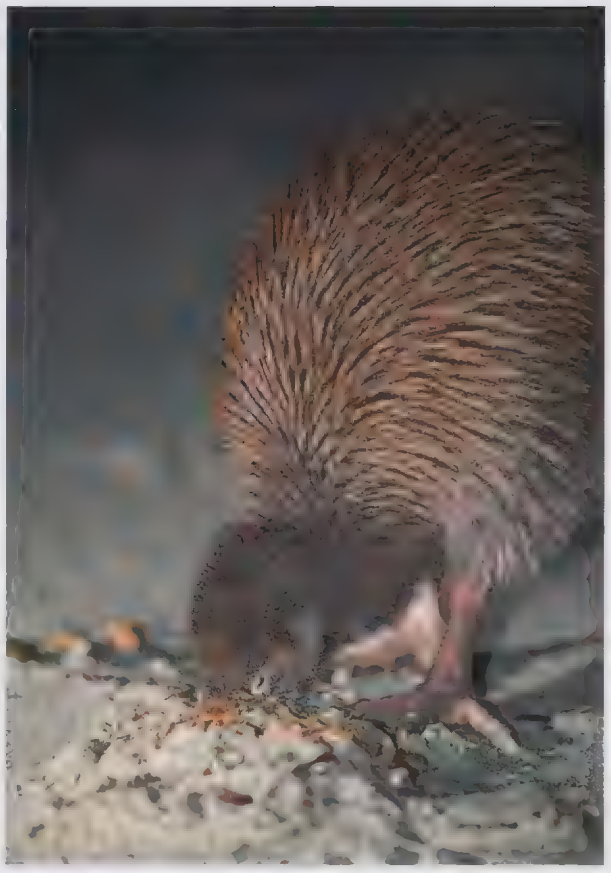
Letters



TUI DE ROY (2)

UNBIRDLIKE BIRDS

I have truly enjoyed the articles by Tui De Roy that you have published during the past few years. She must be a remarkable young woman—an amazing photographer as well as a gifted writer. But her article about kiwis ("A Most Unbirdlike Bird," Autumn 2005) should surely take top honors. It's one of the most interesting articles I have ever seen in *Living Bird.*

Of course, like everyone else, I'd heard about kiwis and seen their picture on cans of shoe polish, but I never realized how truly different and strange they really are. I can only imagine how difficult it was and how much time it must have taken to capture such intimate photographs of these birds engaged in their nocturnal roaming and foraging. I hope you publish more articles by Tui De Roy in future issues.

Mrs. A. L. Jones
Boston, Massachusetts

BACK IN BRITAIN

During a recent visit to America, I had the pleasure of reading the latest issue of *Living Bird* at a friend's home. I was very pleasantly surprised to see an article on the Great Bustard reintroduction effort taking place in my country ("The Return of the Native," Autumn 2005).

Although I have seen this species once in Spain, the thought that I may someday be able to watch it on the Wiltshire Downs of southern England, so close to my home, is unbelievably thrilling to me. It is such a spectacular bird and was such a great loss when it was hunted into extinction here in the 19th century.

DAVID TIPLING

For us in Britain, having this bird back is something akin to how it must be for you Americans to have found that there is still hope for saving the Ivory-billed Woodpecker. We are lucky that Great Bustards still have healthy populations in other countries that we can draw from to reintroduce the bird in Britain, but it will still be a remarkable achievement.

My compliments to author J. C. Roland for her admirable journalistic skills in reporting this hopeful story.

Geoffrey Stevens
London, England

We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

In Memoriam David G. Allen

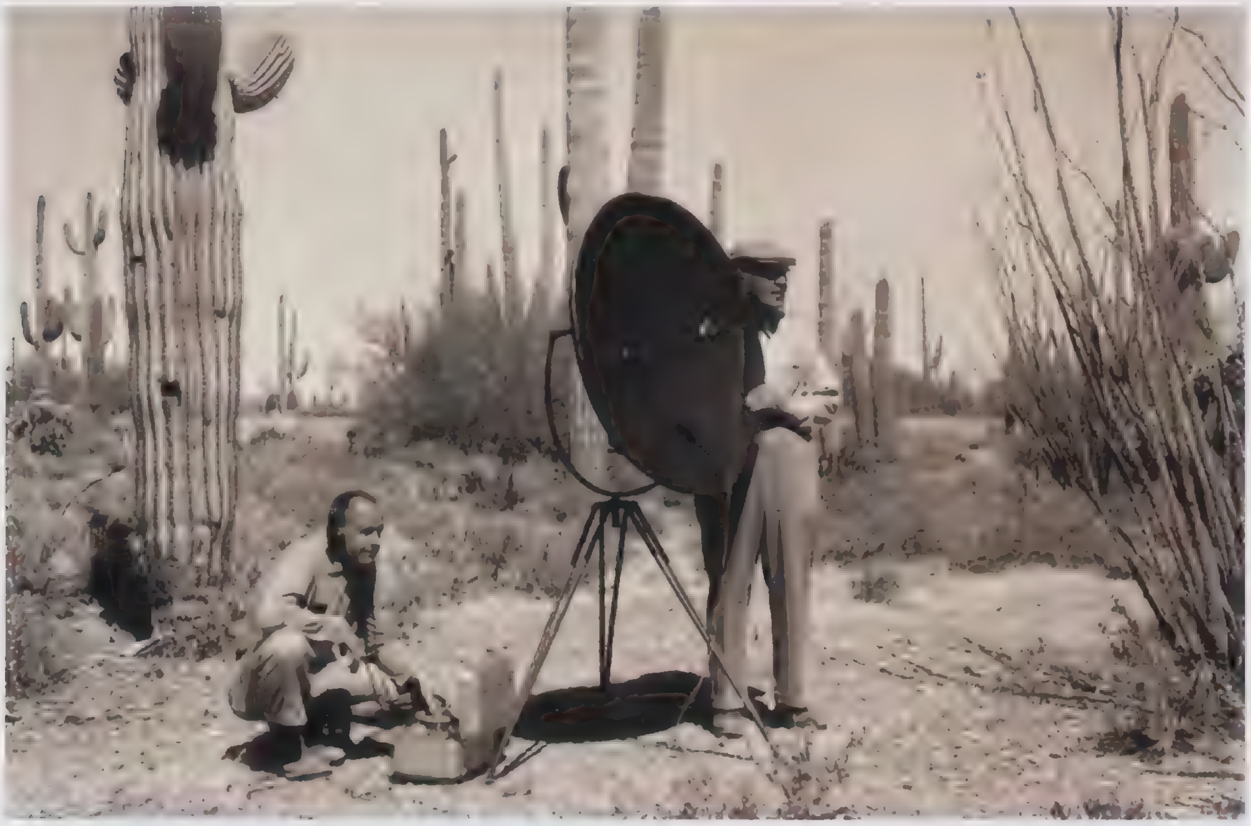
(1926–2005)

The Lab of Ornithology lost a longtime friend this past October 15, when David G. Allen passed away. The son of famed Cornell ornithologist and Lab founder Arthur A. Allen, David played a major role in the formative years of this institution.

I met him 15 years ago, when I became editor of *Living Bird.* I remember when we were first introduced I had a large black-and-white picture on my office wall of his father holding a camera and huge telephoto lens. (I'd been a great admirer of Arthur Allen for years because of his pioneering work in nature photography.) I had been warned that David could be gruff until he got to know you better, but he took one look at the picture of his father and his face lit up with a beaming smile. We found that we were both avid photographers and flyfishermen, and became instant friends.

Naturally, growing up in Doc Allen's household, David had a lifelong interest in birds. Back in 1935, when his father was planning the famed 1935 Cornell University—American Museum of Natural History Ornithological Expedition, in which the first motion pictures and sound recordings of Ivory-billed Woodpeckers were made, David begged to go along. His father said he was too young (he was only nine years old), but he promised he could come on his next expedition. True to his word, Doc Allen began taking him on all of his journeys, and David quickly became his right-hand man.

When Arthur Allen searched for the great Imperial Woodpecker in the rugged mountains of Mexico's Sierra Madre Occidental in 1946, David was there. And he was the first to spot the sought-after bird—the largest woodpecker in the world and the ivory-bill's closest relative. And David was one of the last living Americans to have seen an Imperial Woodpecker, which hasn't had a confirmed sighting since the mid-1950s.



David G. Allen (left) records bird songs with his father, Arthur A. Allen, in the Arizona desert. At right above, David poses with his Labrador retriever.

When Arthur Allen went to Alaska to search for Bristle-thighed Curlews, David was there—and he located the first nest of the species ever recorded, a discovery that made headlines around the world.

He was a born adventurer and traveled widely to study and photograph birds. He returned to Mexico in the early 1970s, hoping to find Imperial Woodpeckers again, and spent weeks trekking on muleback into the remotest high-mountain pine forests.

I used to drop by and visit David at his home, just down the street from the Lab on Sapsucker Woods Road. We would sit outside in the shade and talk about the old days. He often invited me to go trout fishing with him, and I always said that I would. My one big regret is that I never took him up on his offer.

David is survived by his wife of 49 years, Joan Griffen Allen; his son, Arthur A. Allen II; his daughters Constance Elise Allen Thompson and Nora Allen Mekeel; his grandchildren Robert P. Mekeel, Jr., Travis L. Allen, and Caitlin E. Allen; and his sister, Prudence Allen Bentley.

—Tim Gallagher

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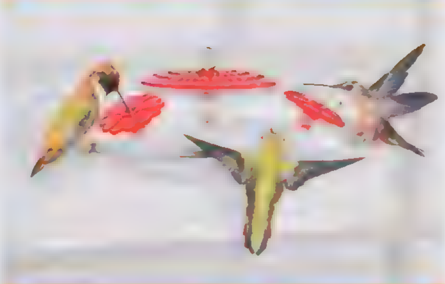

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Text and photographs by Marie Read

How I learned to stop worrying and love my digital camera

Call me a creature of habit, but there it is: I don't like change. I go on the same three-mile walk for exercise every single day of my life. My breakfast of choice is a banana and whole wheat bread and butter . . . always. So when the first digital cameras arrived a few years ago, I rolled my eyes and resolved to stick with film forever for my bird photography. No way would I go digital. After all, when your goal is to be published in high-quality magazines like *Living Bird*, how could a few pixels ever replace the gorgeous colors and sharpness of fine-grain film?

Except that now those pesky pixels have proliferated: there are billions and billions of them, more and more by the day. And the buzz in the wildlife photography world is digital, digital, digital. What a dilemma I faced. I could sit in self-imposed exile in my candlelit artist's garret, grumbling about the evils of progress, while outside jubilant throngs of bird photographers passionately praised their new digital cameras. Or I could be one of them. What to do?

As luck would have it, in the summer of 2005 I got the chance to upgrade all of my professional equipment. Coincidentally the number of pixels offered by high-end digital cameras finally equaled (some would say exceeded) the amount of information reproducible from 35mm film. The time was right. So I jumped—head-first—out of the Dark Ages and into photography's brave new world. I'm now the proud owner of a top-of-the-line digital camera—all 16-and-a-half megapixels of it.

Of course, publishing has long been in the digital world. The modern presses that print magazines, books, and calendars use digital files produced by scanning film on top-quality drum scanners. Those scans pass through the hands of various graphic designers and prepress operators, to be digitally sharpened, color corrected, and even retouched if necessary, before finally ending up on the printed page.

My main concern was how well digital images would reproduce in printed publications. Could they match the sharpness and color richness of film? Armed with high-quality digital as well as film equipment, I now had the opportunity to explore that very issue. How would side-by-side images of the same individual bird—photographed within seconds of each other under identical lighting conditions, one on traditional film and the other with a cutting-edge digital camera—compare on the printed page?

My experiment involved photographing one of my favorite subjects, American Goldfinch, from my backyard blind. With my two camera bodies ready, when a handsome and cooperative male goldfinch arrived I took some shots with the digital camera, and then, praying that the bird wouldn't suddenly fly away, quickly swapped the film camera onto the same lens. Off went the exposed film to the local processing lab, and while it was being developed, I downloaded its digital counterparts onto my computer.

And this is where you, dear reader, enter the picture. This is a quiz. Consider the two photographs printed on pages 10 and 11. Can you tell which one was taken with traditional film and which one is a digital capture? The answer to the quiz appears at the end of the article, but no fair skipping ahead to peek before you've looked closely at the pictures. Does one look sharper? Is there more or less detail in the feathers, particularly the dark areas? Is one image better than the other in terms of color? Overall, do you prefer one to the other, or are both equally appealing?

For technical detail buffs, here are the equipment models and settings I used. Lens: Both images were shot using a Canon 500mm f/4 L Image Stabilizer USM autofocus lens on the same overcast but bright day. Film camera: Canon EOS 1V HS, using Fujichrome Velvia 100 film set at ISO 125 (as I normally do with this film). Aperture priority exposure mode, 1/200 second at f/5.6. Fill-flash on ETTL at -2/3 stop power. Digital camera: Canon EOS 1DS Mark II. ISO 100, white balance "cloudy." Aperture priority exposure mode, 1/200 second at f/5.6. Fill-flash on ETTL at -2/3 stop power. I applied minimal post-capture processing, including slight saturation increase and sharpening, to the image on the computer during conversion from RAW format to TIFF.

Whatever our individual opinions are about which photograph looks best, there's no denying that the publishing industry is embracing the digital image. Magazine, book, and even calendar publishers now have editors who understand how to work with the new technology, and digital captures are increasingly common on their pages. Meanwhile, professional photographers are avidly learning how to get the most from their new equipment, and photographic equipment manufacturers are working feverishly to push the envelope of pixels and in-camera processors.

Many of us love to make images of birds or other natural subjects. Our goals and aspirations range from casual photography done for pure enjoyment to serious shooting with a view to becoming a published professional, and everything in between. How is digital photography changing our world? Let me count the ways.

High on the list of positives is instant gratification. Nothing beats the thrill of seeing images directly after shooting them, right on your camera's LCD panel. With immediate feedback, you can change your composition or improve your exposure at the time that conditions are ideal. It's particularly helpful if you're trying something challenging—a Blue Jay picking up an acorn in autumn, for instance. After several years of unsuccessful attempts, I captured this behavior recently. I had to download the images to my computer and examine them closely to ensure spot-on focus, but I could immediately confirm that I had gotten the shot for which I had been waiting so long.

Then there's freedom from film guilt. Film guilt? You know what it is. It starts when your trigger-happy shutter finger fires off a burst of shots simply because you're so thrilled to have a bird in your viewfinder that you can't stop yourself even when the bird turns its head away. Your slides come back, and you groan and toss many of them in the wastebasket with their non-biodegradable plastic boxes, to be consigned to the landfill where they'll remain for millennia with all the other reminders of human profligacy. Add to this the millions of gallons of polluting chemicals that labs must dispose of, plus the price of film and processing. With digital, guilt gives way to fun: you can be as creative as you want, experimenting with a variety of photographic techniques, without wasting film and money.

More pragmatically, digital photography has made traveling a little easier. In an era of heightened airport security, it helps not to have to carry hundreds of rolls of film in your carry-on bags. As a working professional, I always ask for my film to be hand checked, a request that airport personnel nearly always meet courteously (albeit with occasional raised eyebrows). On my last plane trip, though, I was delayed while every one of my 116 rolls of film was swabbed for potential explosive residues. Nearly an hour later, frustrated and feeling foolish while unencumbered travelers passed by, I vowed never to fly with film again.

What about the digital image itself? Photographers often lament the inability of film—especially high-saturation slide film—to reproduce detail across the full range of tones in a scene, from the darkest shadows to the brightest highlights. Often, with slide film, if there is detail in the white plumage of, say, a Common Loon's sunlit breast, then the bird's dark head and back appear too dense and lack feather detail. Digital captures—at least those made with digital single-lens-reflex cameras, not the point-and-shoot variety—are more forgiving, allowing detail across a broader contrast range than is available from transparency films. From the very beginning I was impressed by the range of detail visible in my digital captures, from a goldfinch's black wing feathers to its light yellow body plumage.

Countering this, though, digital images straight out of the camera tend to appear somewhat "flat," lacking in contrast and crispness. But you merely need to tweak the color saturation, contrast, and sharpness to your own liking with image-processing software. The consensus in the photographic world is that, far from being digital "manipulation," this editing needs to be done with every digital shot to optimize its qualities. Digital gives back to the photographer the control of what an image ultimately looks like. Furthermore, if your camera enables you to shoot in "raw" mode, you may be able to recover the detail in overexposed bright spots in a high-contrast image, something that's impossible if that image is on film.

On the downside, digital photography ushers in an entirely new way of working with images, and if you're not computer savvy it can be daunting. Your original image does not exist as a piece of film but as an electronic file. It has to be evaluated, transferred to a computer, and edited before it can be printed or posted to a web site. Then it must be stored securely. Should you invest in an external hard drive for storage or archive your burgeoning collection by burning all of your images onto CDs or DVDs? Or be really safe and do both?

Marie Read used a digital camera to capture this picture of a Blue Jay foraging for acorns—and she was able to see the quality of the image immediately.

As digital files accumulate, they must be organized so that each can be located easily for use. Gone are the stacks of yellow boxes filled with slides cluttering up the shelves in your den. Instead, we now have electronic clutter: computer desktops filled with files identifiable only by meaningless numeric file names. If you do a lot of digital photography, the build-up of images can quickly become overwhelming. So yet another decision must be made: which image cataloging software should you purchase?

True, your images can now be printed

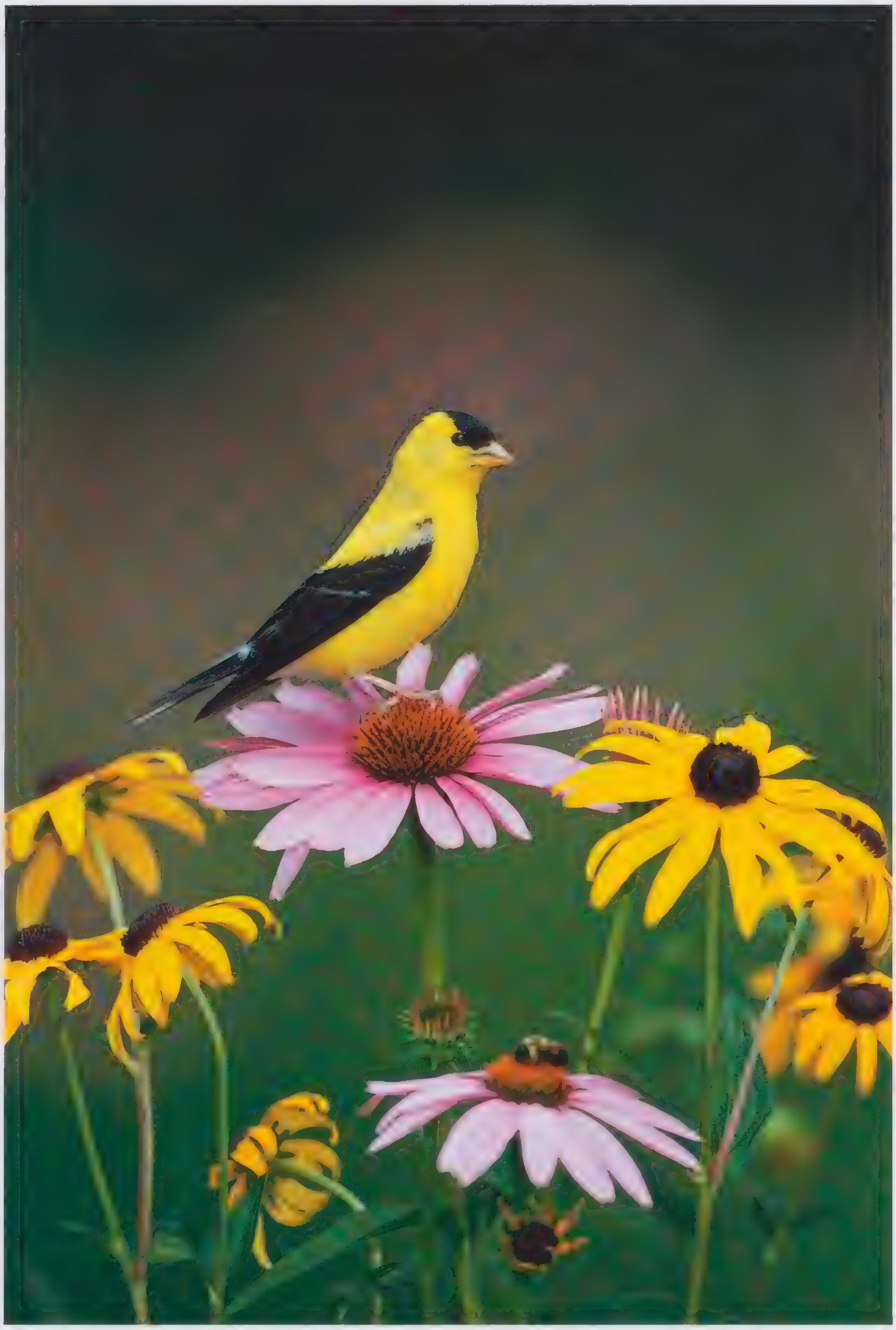
conveniently at home on your brand new color printer, instantly emailed to friends and family, or posted on web sites. No waiting for prints or slides to be processed. But suddenly your old slide projector is rendered obsolete, so if you want to give slide shows you have still more choices to make. Which presentation software to use? Will the digital projector at your venue render the colors in your beautiful images the way you want them, or will you have to buy your own projector? Add to this regular hardware and software upgrades and the ever-newer and more powerful camera and computer equipment on the market. Suddenly the cost savings from not having to use film disappear into a never-ending spiral of buying the latest technology.

Like any technology, digital photography has its own esoteric jargon including an ever-proliferating cast of acronyms to be deciphered. TIFFs and JPEGs, NEF and DNG, CF cards, SD cards, RAID arrays—what do they all mean? And what ever happened to the humble kilobyte? It was surpassed by megabytes, which went forth and multiplied into gigabytes, which promptly begat terabytes! And having gladly left film grain behind, we now require "noise-reduction" software to remove the digital "grain" that occurs if we set our digital camera for high ISO speeds. For the faint of heart all this unfamiliar terminology and rapidly changing way of thinking about photographic imagery—electronic information instead of silver grains—can be intimidating.

A more subtle negative is the undercurrent of public opinion that digital photography is no longer "real" photography. These days, a particularly spectacular or unusual image of wildlife behavior is sometimes regarded with suspicion if it is a digital capture. Has the advent of digital photography somehow sullied the purity of nature photography?

Yet nature photography, like any photography, has always been an interpretive medium, hardly the objective documenter of truth that everyone likes to think it is. Telephoto lenses isolate birds against desirable but unnatural-looking out-of-focus backgrounds. We use fill-flash on gray days to improve the color and contrast of feathers or fur and to add a sparkle to eyes. For dramatic effect we use wide-angle lenses to distort perspective and scale and add polarizing filters to intensify blue skies or remove glare on sunlit leaves. The interpretive process has never ended when the shutter button was pressed. Long before digital photography, black-and-white landscape photographers spent hours in the darkroom, painstakingly dodging and burning to get the best prints from their negatives.

Even before tripping the shutter, nature photographers choose what to include or omit from their compositions. Many of my bird photographs are backyard feeder shots (including



Can you tell which of the pictures on this two-page spread was taken with conventional slide film and which was taken with a digital camera? Marie Read took these pictures of the same American Goldfinch, just minutes apart, using the same telephoto lens. The answer is at the end of the article.

these goldfinch images). I regularly set up perches with colorful surroundings or use feeders to entice the local birds to perch in flowering or fruiting shrubs on my property—hardly a natural situation, but one that gives me the option of fine-tuning the composition by removing distracting objects if needed. When I'm in the field, that is often not possible, nor would it be ethical. Yet, digitally "cloning out" an errant stick or distracting leaf from a photograph might be considered cheating by some purists.

Perhaps the public's concern is that digital manipulation may go too far, and that heavily retouched or composite images might be passed off as reality, thus diminishing the viewer's trust in the truth of nature photography. As I mentioned earlier, digital captures nearly always need optimization for color, contrast, and sharpness, but where do you draw the line? It's tempting to add or subtract from the digital frame as part of a never-ending search for perfection. If six ducklings make a cute composition, wouldn't twelve be cuter? For our part, we nature photographers should probably think hard before succumbing to such temptation and be forthcoming in our captioning when drastic digital manipulation has been performed. The public expects nature to be natural, yet digital photography has allowed the fuzzy line between documentation and interpretation, between reality and art, to be blurred still further.

Personally I don't have any problem with digitally retouching to remove distracting elements or repair minor problems with an image. Digital composites can be fun to play with too, but with my background in biology I'm uncomfortable representing something intended for publication that didn't actually occur in the natural world. More important, the thrill and pride I feel when I've obtained an unusual or challenging photograph could never be matched by achieving the same thing with a composite image concocted on my computer.

Good nature pictures require the photographer to go out and find a cooperative subject, be there at the right time, and have an eye for color and composition. My digital camera won't do that for me, but it has given me back the sense of joy and fun that got me hooked on nature photography in the first place.

As technology races forward, I'm sure future readers will wonder what all the fuss concerning digital photography in the early 21st century was about. Certainly they will laugh long and loud at the relative paucity of pixels offered by the digital cameras of 2006. Photography is evolving. Who knows where it will end? If beautiful images of our favorite subject—the bird, wild and free, in all its colorful, lively glory—are the goal, maybe it doesn't matter. Ultimately it's the photograph itself, not the method, that counts. ■

Marie Read is a freelance writer and photographer based in Freeville, New York, not far from the Lab of Ornithology. Her work appears regularly in this magazine.

In case you're wondering, the picture on the left was taken with 35mm film, the one above was a digital capture. Send comments to <livingbird@cornell.edu>.

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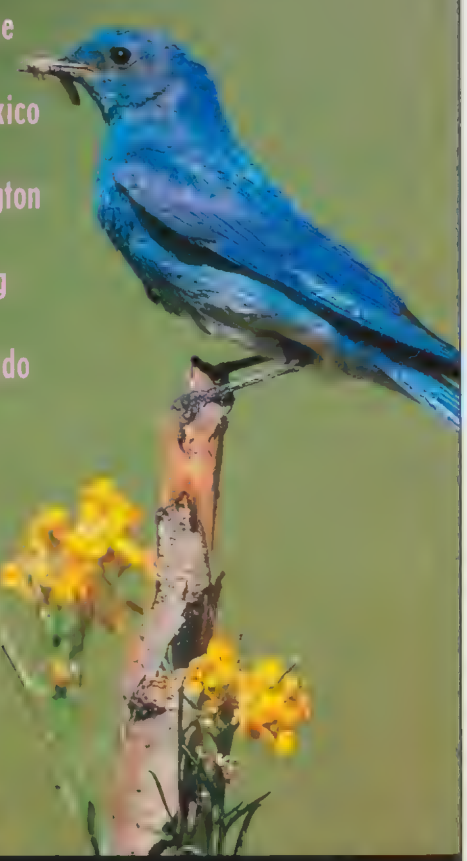

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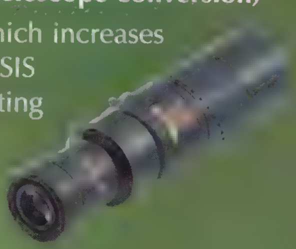

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A BIRDER'S GUIDE TO TURKEY

BY CAGAN HAKKI SEKERCIOGLU

A cornucopia of avian riches at the crossroads of Europe, Asia, and Africa

Turkey has tremendous biological wealth that is often underappreciated. Three of the world's 37 plant zones mingle with various mountain ranges. Habitats range from Black Sea temperate rainforest, where brown bears and wolves roam and Caucasian Grouse and Caspian Snowcocks thrive in the shadow of the Caucasus Mountains, to subdesert scrub, where endangered desert monitors, striped hyenas, and sand gazelles share the southeastern plains with See-see Partridges and Cream-colored Coursers. Lying at the confluence of northern European forests, Mediterranean chaparral, and central Asian steppes, Turkey boasts more than 3,000 species of endemic plants, the highest among medium-sized temperate countries. Until the early 20th century, lions, cheetahs, leopards, and tigers were all found within the current borders of Turkey. The latter two may still survive, and there are

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The Inozu Valley, at left, is just an hour's drive west of Ankara, the capital city of Turkey. Lanner Falcons breed in this picturesque valley. Above, Imperial Eagles nesting in the Beynam Forest south of Ankara.

also important populations of brown bear, wolf, striped hyena, Eurasian lynx, caracal (desert lynx), and other large mammals.

Most important for the visiting birder, 465 avian species have been recorded in Turkey, and the number is growing despite the low number of resident bird watchers. When I started birding 15 years ago, there were only about 20 Turkish bird watchers—this in a country with a population of more than 60 million people. Although this number has since risen more than 10-fold, it is still a remarkably small group. Even so, ornithological discoveries are regularly being made. Promoted by groups such as Doga Dernegi; birding web sites such as <kustr.org> and <turkishbirding.com>; the birding newsgroup Toygar; and the eBird-inspired <kusbank.org>, interest in birding is increasing markedly, creating a new generation of bird watchers in Turkey.

Most non-birding visitors to Turkey concentrate on Istanbul and the southwestern coast, but the best birding locations and specialties are in the center and east. The country contains roughly nine major birding habitats: alpine areas, coastal wetlands, coniferous forests, deciduous forests, Mediterranean chaparral, steppe grasslands and fields, steppe lakes, subdesert scrub, and the neglected open sea. The best time to bird in Turkey is during migration: May and June are best for songbirds, with raptors stealing the show from September to October.

Most birders who visit Turkey come from Europe and are already familiar with the common deciduous-forest birds of their continent. Nevertheless, for American birders visiting Istanbul, exploring the Belgrade Forest can be fruitful for sighting Great Spotted and Green woodpeckers, Marsh and Blue tits, Red-breasted and Spotted flycatchers, Blackcaps, Hawfinches, Short-toed Treecreepers, and other woodland birds. Scanning the Bosporus, which divides Istanbul between Europe and Asia, is also productive for Great Cormorants, Yellow-legged and Black-headed gulls, sea-skimming flocks of Levantine ("Yelkovan") Shearwaters, and maybe even a Cory's Shearwater. During the raptor migration in September and October, the Kucuk and Buyuk Camlica Hills are excellent spots for Black and White storks, Eurasian and Honey buzzards, Eurasian and Levant sparrowhawks, Lesser Spotted, Booted, Short-toed, and occasionally White-tailed eagles. Buyukcekmece Lake, west of Ataturk Airport, is the best (albeit deteriorating) wetland in the city, with records of more than 200 species, including Red-breasted Goose and Wallcreeper. A three-hour ferry ride across the sea of Marmara will take you to Mount Uludag, where Krueper's Nuthatch, Fire-fronted Serin, Red Crossbill, and Eurasian Bullfinch are possible, and to Lake Uluabat and Lake Manyas, where you can look for Dalmatian Pelican, Pygmy Cormorant, Little Bittern, Eurasian Spoonbill, Ferruginous Pochard, and other wetland birds.

Southeastern Turkey is hot and dry, and Birecik, home to a free-flying colony of Walldrap ("Northern Bald Ibis"), is great for subdesert birds. Bordering the great Arabian deserts, this area is part of ancient Mesopotamia, "the area between the two rivers" of the Tigris and Euphrates. Both originate in Turkey, and when birding along the Euphrates, you can see Pygmy Cormorants, Little Swifts, and Pied Kingfishers, as well as uncommon specialties such as See-see Partridge and Pale Rockfinch in the dry *wadis* and Cream-colored Courser and Desert Lark higher up.

In the afternoon, seek shelter from the heat in the orchards, where Ménétries's, Upcher's, and Olivaceous warblers and Dead Sea, Spanish, and Yellow-throated petronia can be seen. As evening approaches, riparian areas may provide sightings of Black-bellied and, rarely, Pin-tailed sandgrouse coming to drink. Owling can also be productive. Besides Long-eared, European Scops, Little, and Barn owls, Eagle and Pallid Scops owls are possible, the last-mentioned most reliably found in a tea garden.

Little Swifts and Rock and Persian nuthatches frequent the crags of nearby Halfeti, over which patrol Bonelli's and Short-toed eagles. The boulder-strewn cliffs of Durnalik and Isikli, west of Birecik, may reveal Eastern Orphean Warblers, uncommon Cinerous and more widespread Black-headed and Cretzschmar's buntings and rare Red-tailed Wheatears.

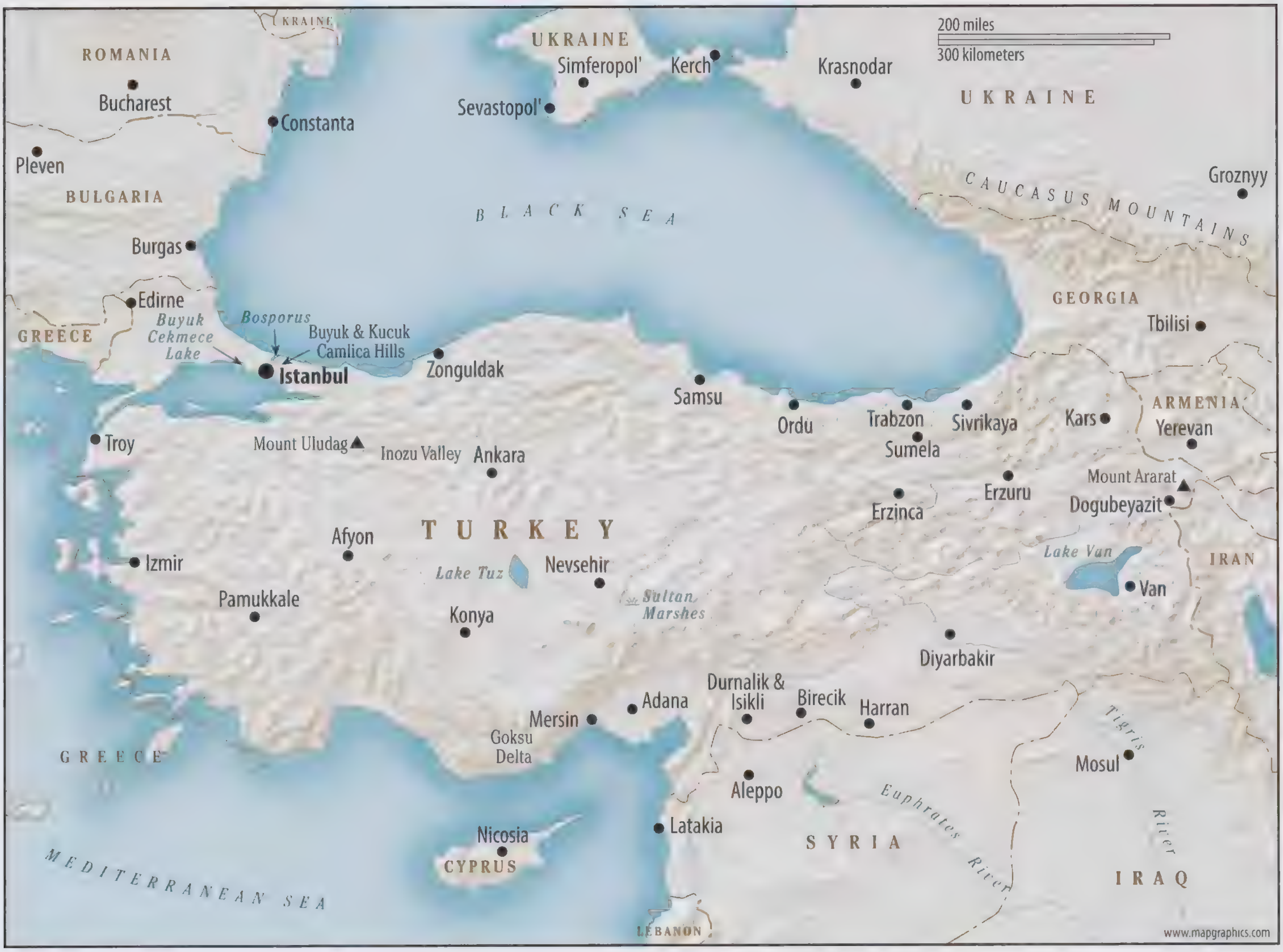
Heading west, you cross the northern terminus of the Great Rift Valley, which starts in East Africa and ends in Turkey at Amik Lake. Before it was drained, the lake hosted the northernmost African Darter population. An African influence is also seen in other wildlife such as common chameleon, black-backed jackal, and Egyptian mongoose, none of which is uncommon in southern Turkey. Near subtropical Akyatan lies the Cukurova Delta of the Seyhan and Ceyhan rivers, with four globally important bird areas. This is where I saw my first White-throated Kingfisher and White-spectacled Bulbul. The delta is known for its rich birdlife, including hundreds of Greater Flamingo, Black Francolin, Collared Pratincole,

CAGAN HAKKI SEKERCIOGLU (2)

The open and mountainous terrain of Anatolia, interspersed with forests, provides a perfect habitat for Short-toed Eagles (left).

The otherworldly landscape of Cappadocia was created by the repeated explosions of Mount Erciyes (Aergius) seen in the background. In addition to the "fairy chimneys," various good birding spots lie nearby.

MAP GRAPHICS


200 miles
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ROMANIA
Bucharest
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Pleven
BULGARIA
Burgas
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GREECE
Buyuk Cekmece Lake
Bosporus
Buyuk & Kucuk Camlica Hills
Istanbul
Zonguldak
Simferopol'
Kerch
Sevastopol'
Krasnodar
BLACK SEA
CAUCASUS MOUNTAINS
Groznyy
GEORGIA
Tbilisi
ARMENIA
Yerevan
Kars
Samsu
Ordu
Trabzon
Sumela
Sivrikaya
Troy
Mount Uludag
Inozu Valley
Ankara
Erzinca
Erzuru
Mount Ararat
Dogubeyazit
TURKEY
Afyon
Izmir
Lake Tuz
Nevsehir
Sultan Marshes
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Snowy and Spur-winged plovers, Slender-billed Gull, Graceful Prinia, and Spanish Sparrow. In winter, this is the best place in Turkey for Great Black-headed Gull, which I observed in January 2002, in addition to Short-eared Owl, Red-throated Pipit, and a rare Black-legged Kittiwake. During migration, rarities such as Broad-billed Sandpiper, Eurasian Dotterel, and Greater Sand Plover are possible.

Two hours west on the toll highway, near Tasucu, lies the Goksu Delta. This is the crown jewel of Turkish birding sites. Among the more than 335 species are highly sought-after birds such as Pygmy Cormorant, Black Francolin, Marbled Teal, Ferruginous Pochard, Purple Swamphen, Audouin's Gull, and, if you're lucky, Eleonora's Falcon.

The coast between Akyatan and Goksu is important for nesting green and loggerhead turtles. Tasucu graveyard has Masked Shrikes and, especially during spring, check the chaparral and nearby Uzuncaburc for Barred, Bonnelli's, Garden, Icterine, Olivaceous, Rueppell's, Sardinian, Olive-tree, and other warblers. Also be alert for rarities, such as the Terek Sandpiper and Red-breasted Goose; I saw 39 of the geese there during the harsh winter of 2002, when it even snowed in Adana, a rare event. Anamur is good for seawatching, and Cory's Shearwater, Gannet, and even Parasitic Jaeger have been seen.

Inland from Goksu and Cukurova, lie the Aladaglars, part of the Taurus range and excellent for montane species. Birder-oriented Safak Pension in Demirkazık makes an ideal base. Red-billed and Yellow-billed choughs are common in the spectacular Cimbar Canyon, Chukar is likely, and Wallcreepers nest. If you are less than eager to hike up the treacherous canyon at 3:00 A.M. to search for Caspian Snowcock, Hasan Safak can arrange a tractor ride for you, which is an unequalled birding adventure. Although a trailer can be bumpy, you will be better off than sitting between the two rear wheels, as my brother and I did two years ago. Leaving at 4:00 A.M., you ascend from 1,500 to 2,500 meters to look for Caspian Snowcock, as well as Wallcreeper, Alpine and Radde's accentors, Fire-fronted Serin, Crimson-winged Finch, and raptors such as Golden Eagle, Eurasian Griffon, and perhaps even Lammergeier.

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To the west is the vast Anatolian Steppe, where breeding Greater Sand Plovers can be seen. During long drives through Anatolian fields, be sure to check utility poles and scan the skies for raptors. The migration can be impressive in the Sultan and Eregli marshes, where you can see hundreds of migrating waders and one of the largest Lesser Kestrel colonies of the Western Palearctic near Bogecik. The Seljuk city of Konya, home to whirling dervishes, caravanserais, and religious seminaries, has plenty to see for a non-birding companion. Nearby are the ruins of Catalhoyuk, the world's oldest known human community, dating back to 7,500 B.C.

At 1,900 square kilometers, Tuz (Salt) Lake of Central Anatolia is one of the largest in the world, but it is rapidly deteriorating because of draining and pollution. Kulu Lake, an hour south of Ankara, is of global importance for its populations of Greater Flamingos, White-headed Ducks, Greater Sand Plovers, and many waterbirds. The surrounding steppe can be excellent for finding larks and raptors. In addition to studying larks, during migration be ready for rarities such as Demoiselle Crane, Great and Little bustards, Great and Jack snipes, Eurasian Dotterel, Broad-billed Sandpiper, Temminck's Stint, Terek Sandpiper, Citrine Wagtail, and Bluethroat. Unfortunately, like many Anatolian steppe lakes, Kulu is rapidly drying. The nearby lakes of Kozanli, Uyuz, and Mogan offer further possibilities for breeding and migrating

The Red-tailed Wheatear (left) is one of the top specialties of eastern Turkey, limited to a few mountains there. This bird was photographed near Durnalik, east of Adana, but it is most common on the historic Mount Nemrut of Kahta. Spur-winged Plovers (below) are common in the wetlands of central and western Anatolia and are easier to see than most of the 16 plover species found in Turkey.

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Mount Agri (Ararat) is a dormant volcano and at 5,165 meters, the highest mountain in Turkey. It is also the purported resting place of Noah's Ark. White Storks forage in the foreground, below.

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wetland birds, such as Squacco Heron, Ruddy Shelduck, Ferruginous Pochard, White-winged, Black, and Whiskered terns, Bearded Reedling, and Eurasian Penduline-Tit.

North of Ankara, you enter conifer-dominated forest characteristic of the Black Sea Mountains, a good area for raptors. The relict forest of Beynam supports a pair of Imperial Eagles. Beypazari Canyon has breeding Egyptian Vulture, Lanner Falcon, and Black Kite as well as Black Stork, Blue and Rufous-tailed rock-thrushes, and Finsch's Wheatear. Various raptors, including majestic White-tailed Eagles, nest around Sariyer Dam, and Beypazari municipal dump can be good for vultures.

Soguksu National Park, near Kizilcahamam, is famous for its hot springs. It is an excellent place to stay because you can shower in hot mineral water. The 12-kilometer dirt road encircling the park provides easy access for birding. It is an ideal location for owling, where you can find Barn, Little, Tawny, Scops, and Eagle owls. Most of the handful of records for Boreal (Tengmalm's) Owl in Turkey come from there, including an individual that I observed in September 2004. This is a great site for raptors—31 species of which have been recorded. It is the best place in Turkey to find Lammergeier, Northern Goshawk, Booted Eagle, and Cinerous Vulture. The area is also good for finches such as Hawfinch and bark specialists such as woodpeckers, treecreepers, and the Krueper's Nuthatch, which is limited mostly to Turkey.

The itinerary described above will keep a keen birder busy for two solid weeks and can produce close to 250 species during migration. For the dedicated listers, eastern Turkey is a true birding frontier, with Caucasian specialties such as Caucasian Grouse and Mountain Chiffchaff competing for attention with Central Asian birds such as Demoiselle Crane, Paddyfield Warbler, Mongolian Finch, and Gray-hooded Bunting. With the exception of Sumela, Sivrikaya, Dogubeyazit, and Lake Van, eastern Turkey (which is larger than England) is rarely birded, and the possibilities for new discoveries are considerable. But remember that distances are large and accommodations are limited. You should also be aware that binoculars and spotting scopes should not be used near sensitive border areas such as Dogubeyazit. You should seriously consider traveling with a guide or interpreter or at least have a letter in Turkish explaining your purpose.

Even though northeastern Turkey borders Georgia, the Caucasus Mountains block cold weather, and the climate is mild. Black Sea clouds dump more than two meters of rain yearly on the 3,937-meter-high Kackar Mountains, which are

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covered with extensive Colchian rainforests. Trabzon provides convenient air access, and the breathtaking Sumela Monastery—carved into a sheer rock face—is only an hour away. On the trail to this splendid edifice, look for White-throated Dipper, Green Warbler, Black Woodpecker, and coniferous forest birds. Most birders come to the northeast with one bird in mind: the Caucasian Grouse (see page 23). The quaint village of Sivrikaya in the Kackar Mountains, three hours southeast of Trabzon, is the place to see it and around the village stream is good for Mountain Chifchaff. When the male grouse perform their display in May and June, you will need to leave at 3:00 A.M. to have a good chance of seeing them. You may be lucky enough to observe males dancing at their leks, with the splendid vistas of the snow-covered Kackars in the background. At the foot of the mountain behind Sivrikaya's summer village, persistent birders may also find Caspian Snowcock. Your chances for seeing both grouse and snowcock will be much greater with the help of the resident guide Mustafa Sari, and you will also be creating a financial incentive for bird conservation.

Heading inland to drier eastern Anatolia, scan the skies for raptors and, crossing the mountains around Ispir, keep your eyes open for *Ficedula* flycatchers, such as Semicollared. In central and eastern Turkey, always check starling flocks for the elegant Rosy Starlings and keep your eyes and ears open for the ferocious kangal dogs, which are extremely territorial. Most birders will be heading to Dogubeyazit, at the foot of mighty Mount Agri (Ararat), the highest peak in Turkey and the purported resting place of Noah's Ark. The place to bird is behind the imposing Ishak Pasha Palace, where it is possible to see Rock Nuthatch, Gray-hooded Bunting, Mongolian Finch, and other rock-loving passerines on the scree-covered cliffs. Driving south, east of Caldiran, we have seen Twite, White-winged Snowfinch, and Mongolian, Trumpeter, and Crimson-winged finches in the same hour on Mount Tendurek's fresh-looking lava flow—more reminiscent of Hawaii than Turkey. Halfway between Dogubeyazit and Van, Eagle Owls have bred in the gorge of Muradiye waterfall. Saker Falcon is also a local specialty, though never a sure thing.

Rosy Starlings (above) undergo periodic irruptions tied to insect emergences. Although the species is erratic in most of Turkey, it can be found fairly reliably in the east.

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Lake Van (above) was formed when Mount Nemrut blew its top off during the Pleistocene and blocked the Van basin's only outlet. The endangered White-headed Duck (below) is the most threatened bird regularly seen in Turkey.

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Between Georgia and Lake Van, Red Kites regularly pass during migration, as I observed last year near Kars, an up-and-coming birding destination. Within an hour of Kars, I have seen White-headed Duck, Eurasian Griffon, Pallid Harrier, Lesser Kestrel, Chukar, Armenian Gull, Wryneck, Citrine Wagtail, Red-throated Pipit, Blue Rock-Thrush, White-throated Robin, Finsch's Wheater, Rosy Starling, and (Caucasian) Twite. At the bird-banding station my colleagues and I set up near the city, we banded Caucasian Chiffchaff, Green Warbler, and Levant Sparrowhawk and watched Ruddy Shelduck, Eagle Owl, and Steppe Eagle fly over the nets. Lesser Spotted Eagles nest in nearby Ardahan forest. Cinerous Vulture and Blue-cheeked Bee-eater were seen at the spectacular Ani ruins last year. White-winged (Velvet) Scoter, Lammergeier, Slender-billed Gull, Alpine Accentor, Ring Ouzel, Pied and Red-tailed wheatears, Yellow-billed Chough, and Crimson-winged Finch have also been observed recently in the province. Hypocolius has been seen in bordering Igdir, where Desert and Ménétries's warblers are possible.

At 3,755 square kilometers, Lake Van is the biggest lake in Turkey. Its alkaline content is so high, many local people clean their clothes without soap in its waters. As a result of the recent rise in the lake level, the marshes along the southern shore of Lake Van have lost their former glory, but you may still find Siberian Stonechat, Marbled Teal, Ferruginous Pochard, White-headed Duck, Citrine Wagtail, and Paddyfield Warbler, among others. Amazingly, Plain Leaf-Warbler has recently been found breeding southeast of the lake. The extinct volcano of Mount

Nemrut, northwest of Lake Van, is good for Bimaculated Lark and montane species such as Alpine Accentor and Ring Ouzel, with out-of-place White-winged Scoters breeding in its crater lake.

West of Mount Nemrut lies the Murat Valley, a special place where traditional agriculture has preserved declining pastoral habitats and the species that depend on them. In addition to Common Cranes, the stretch of Murat river near Bulanik is the only known breeding location for Demoiselle Cranes in Turkey, although sighting them is not guaranteed. On June 17, 2005, Soner Bekir, myself, and the rest of our group saw five of them plus three Great Bustards in the same hour. Little Bustards also breed there but are difficult to find.

As you have realized by now, Turkey offers a great diversity of avian life, with many spectacular species and a good mix of European, Mediterranean, Central Asian, and Middle Eastern specialties. It is one of the safest, most accessible countries to visit in its region, with a low crime rate and an excellent highway system. There you can experience breathtaking scenery, traditional Turkish hospitality, delicious cuisine, 10,000 years of history, *and* some of the best birding in the Western Palearctic. ■

Cagan Hakki Sekercioglu is a Turkish conservation ecologist and nature photographer doing postdoctoral work at Stanford University's Center for Conservation Biology. His research focuses on avian ecosystem services, bird extinctions, and the biodiversity of human-dominated habitats in Costa Rica and Turkey. He initiated locally-based, nonprofit birding tours in Turkey to fund bird and habitat conservation. Details are at <www.turkishbirding.com>.

A FIRST ENCOUNTER

When I arrived in Sivrikaya in July 2001, I was greeted with great fanfare, hugs, and kisses. This was because I was the first Turk ever to visit the place to look for the Caucasian Grouse, although hundreds of foreign bird watchers had been coming since the 1980s. I learned this from the village chief, whose brother, Mustafa Sari, shows the grouse to bird watchers. The village does not have a hotel, so they kindly put me up in the village mosque, which is not unusual. It is an example of Turkish hospitality and religious tolerance that the residents of Sivrikaya have put up many foreign bird watchers in the mosque, even though they were not Muslims. The hospitable villagers also gave me refreshing ayran (yogurt and water) and the local specialty of sac kavurma, consisting of delicious chunks of beef cooked on a metal sheet.

Next morning, Mustafa Sari met me at the mosque at 3:00 A.M., and soon we were breathing heavily as we hiked up a steep slope to get 1,000 meters above the village, itself more than 1,500 meters above sea level. In May and June, birders may be lucky enough to observe male grouse displaying at their leks while enjoying splendid vistas of the snow-covered mountains. But because the mating season was over, I was doubtful of my chances. Common Rosefinches were everywhere, and we flushed a Common Quail on the way up. While scanning the skies for raptors, I was also tense in expectation of a grouse bursting from the vegetation. They flush very close by, so it felt like walking in a minefield. Long before we flushed any grouse, Mustafa's keen eyes noticed two males about a kilometer away, on the other side of the deep valley. Even with my state-of-the-art binoculars, I could barely discern the two black dots from such a distance. We had to get closer. As we struggled to avoid falling while walking on the slope of slippery rhododendrons, my heart leapt as two explosions beneath my feet resolved into khaki-clad female grouse, which skimmed over the nearby ridge and dropped back into the rhododendrons. But I was not satisfied with this two-second look.

After an hour of struggling, we finally came to the area where we had seen the males. I thought I saw some vegetation move about five meters away, and Mustafa went to check it as I waited with my camera. Just as I was concluding it must have been a rodent, the jet-black cock exploded from the glistening vegetation. It was such a breathtaking experience that I forgot to take any photographs until the bird was only a speck in my viewfinder. But I still hoped to catch the other bird as Mustafa walked toward me. And there he was—once again scaring both of us. This time I was ready. I fired away, as my predictive auto-focus stayed on this elusive symbol of the Caucasus Mountains. The image of the blood-red eyebrow against the coal black plumage is still deeply engraved in my memory.

A PERFECT SETTING

TEXT BY D. R. OTIS
PHOTOGRAPHS BY MARIE READ

Creating a natural landscape at the Lab of Ornithology

Building the Johnson Center for Birds and Biodiversity was an enormous task, requiring generous funding and years of planning before the first shovel of earth was turned. From the beginning, everyone working on the design knew that this project would disrupt the landscape at Sapsucker Woods. Contractors would be knocking down old buildings and tearing up parking lots. Beyond the footprint of the building itself, the construction crew would need a big staging area for heavy equipment and storage. New parking lots had to be installed and the existing road rerouted. A small stretch of wetland had to be filled to accommodate the building itself. In effect, a landscape of several acres, including remnants of the old farm on which the Lab was established, had to be taken apart. The planners recognized that they had an unusual opportunity: How should the landscape be put back together?

It is a question that could be answered in different ways, and the results of the Lab's decisions are in place now—the first step in a successional process that will, some decades hence, bring Sapsucker Woods right up to the Johnson Center's door.

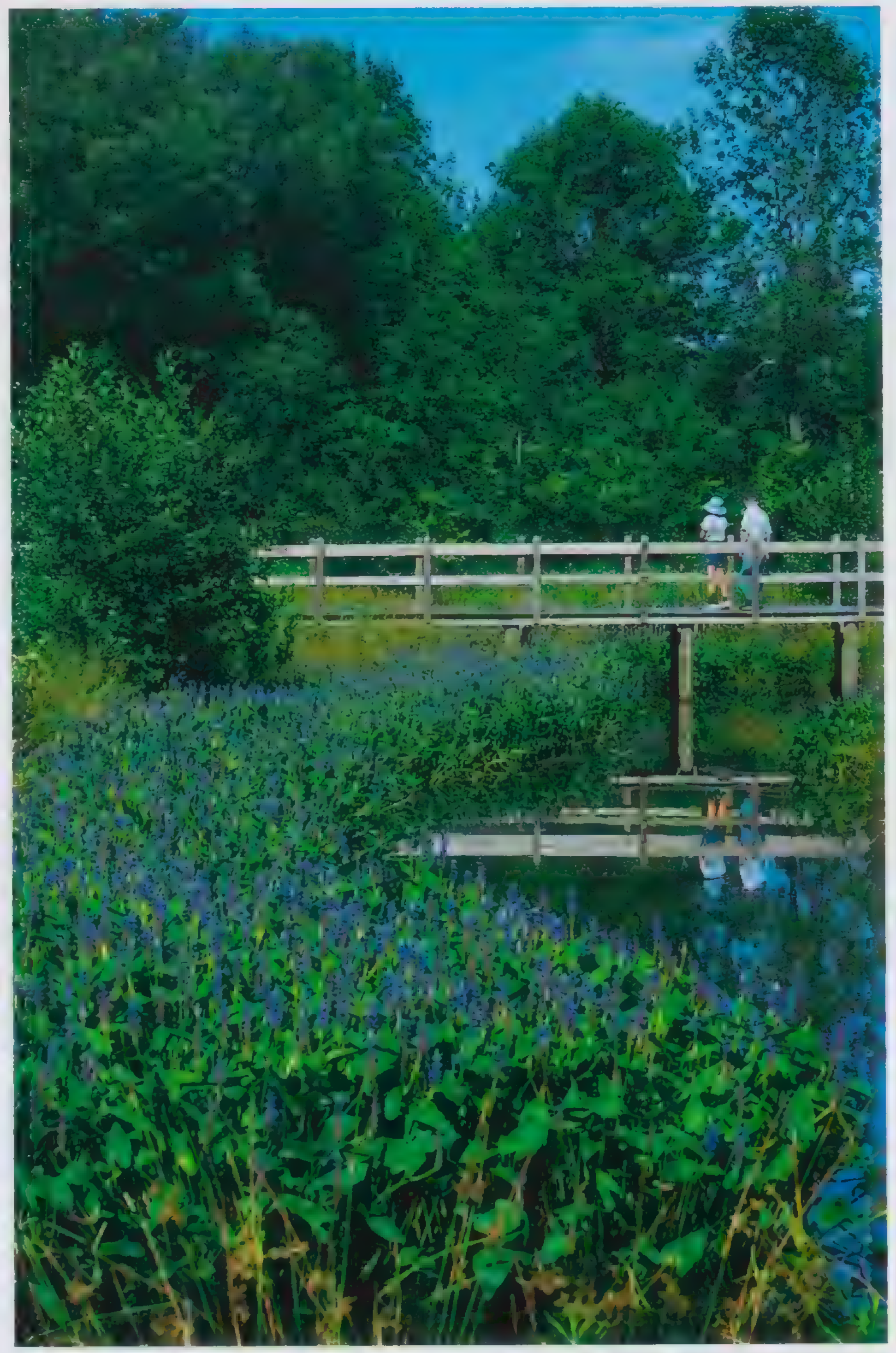
Scott Sutcliffe, the Lab's associate director for development, was deeply involved in the landscape planning, along with landscape architects, other Lab staff, academic experts on ecological restoration and native plant communities, and an array of specialist consultants. He and other planners from the Lab had lengthy discussions about what sort of habitat they wanted to create. "We wouldn't be adding enough new habitat to, say, develop a savanna that would attract Henslow's Sparrows," he says. "We thought it was probably best to create more of the same—to take some marginal properties that we already owned and turn them into really neat wetlands.

"In a sense, we took the same vision we had when we created the Treman Bird Feeding Garden 12 years ago, and we extended it. When we shared this vision with the landscape architect, her idea was to create the new building and parking areas on islands, surrounded by water, and we liked that."

So today, the Johnson Center is surrounded by ponds, swamps, seasonal swales, ditches, and streams. A cattail marsh curves past the visitor parking lot, flowing into the pond just outside the main entrance. A wooden bridge crosses the stream that separates the building from the old forest to the south. Visitors share the bridge with squirrels and chipmunks—fat squirrels and chipmunks—traveling to and from the bird-feeding garden. The long axis of the building, with floor-to-ceiling windows on both floors, looks onto the pond on one side; running the length of the building on the other

CORNELL LAB of ORNITHOLOGY

No lawnmowers needed here. At left, the Johnson Center provides the backdrop for a stand of cattails, goldenrod, and other native plants. Above, asters and shrub dogwood in autumn.



Native irises (above) and blue-flowered pickerelweed (on facing page) flourish in the Fuller Wetlands, just north of the Johnson Center.

side is a swale that visitors cross on a stone bridge. At intervals across the landscape are seasonally wet patches of forest trees, tangles of underbrush at their feet, nearly impenetrable to humans but a haven for birds.

"We thought that when you get out of your car, you shouldn't just be walking through a parking lot," says Scott. "You should immediately feel like you're in a sanctuary. You're walking across a bridge through a wetland, and you're seeing birds all along the way. The idea was to use the space between the building and the parking lot as a prelude, creating the feel of wildlife habitat, on the way to the grand views and exhibits of the Johnson Center itself."

Like the rest of the landscaping, the array of waterways serves a dual purpose. The parking lots are unpaved. "We want the water to percolate down through the soil before moving into the wetlands," Scott explains. It undergoes biological filtering before flowing into the pond and ultimately downhill to Cayuga Lake. The result benefits the environment—conventional paved parking lots often drain rainwater, along with dripping residue from cars, directly into waterways.

But the Lab of Ornithology parking lot doesn't look conventional. It isn't a uniform surface bordered by the straight, clean lines of curbs. Unmowed plants grow right up to the edge, and over time, plants that can tolerate being run over once in a while will creep into the lot itself. The goal was to put birds and the environment first, and the tradeoff was to have less of the neatness we're accustomed to seeing in mall parking lots. Landscape design based on conservation priorities can sometimes look unmanicured and messy—like nature itself.

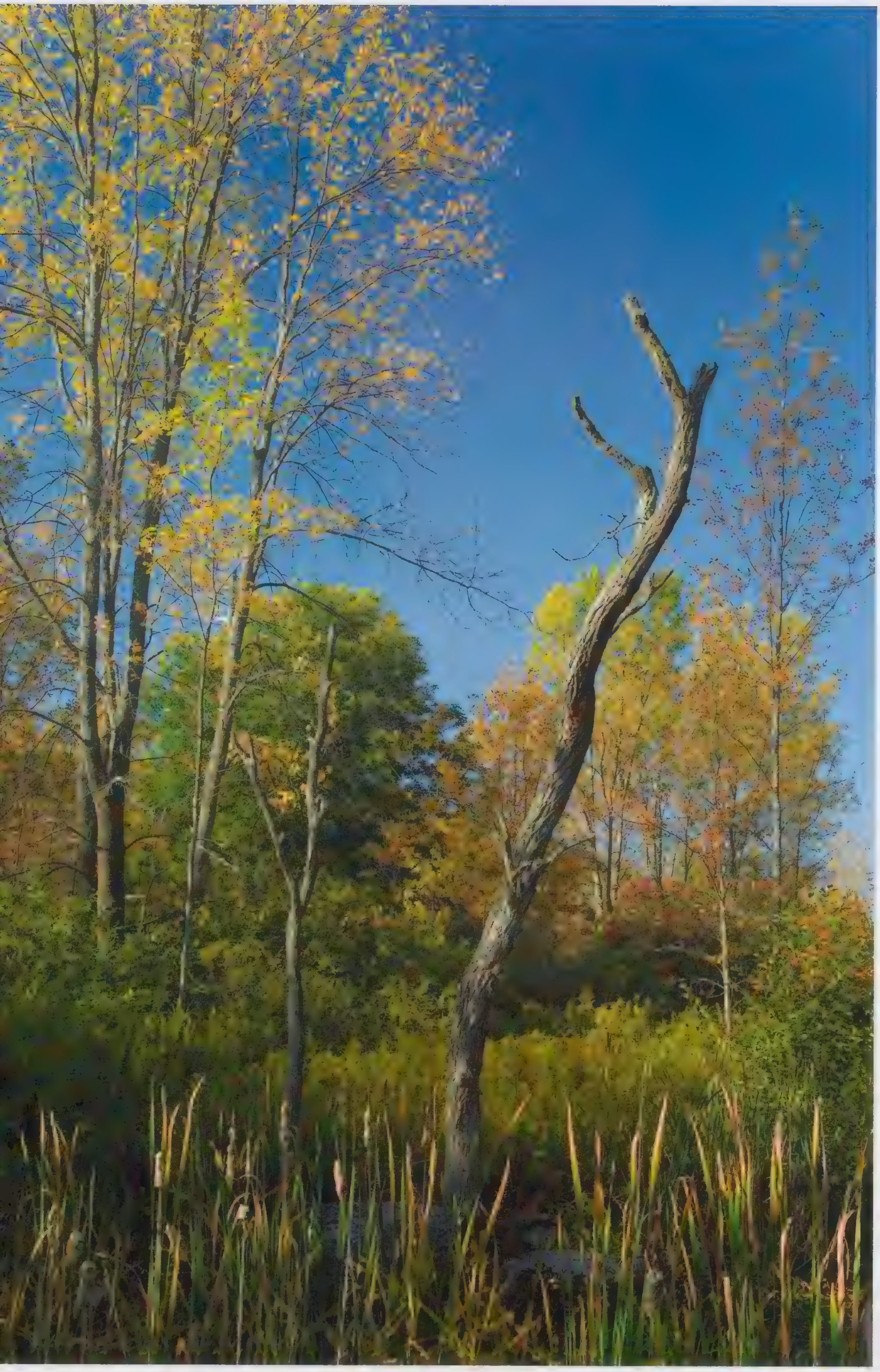
You won't see much lawn in the new landscape, either, and this departure from convention is more controversial. We're accustomed to seeing public institutions surrounded by neat swards of grass, but lawns are a barren ecosystem for birds and other wildlife. They provide no cover or nest sites. Lawns don't attract pollinating insects or aggregations of insect herbivores that birds feed on, and since mowed grass doesn't set fruit, there is little to attract seed-eating birds. The plan was to create a meadow instead of a lawn. Because the proposed meadow area had been used as a staging area for construction, the soil, severely compacted by years of bulldozer traffic, was unsuitable for planting. New soil was brought in and an expensive wildflower seed mix containing plants such as black-eyed susan, blue vervain, Joe Pye weed, and New England aster was spread over the area. Weeds brought in with the new soil provided stiff competition, but some of the species in the seed mix took hold too.

In the short run, some people think this landscape looks scraggly, as if it weren't being kept up, but Scott disagrees. "Some people would prefer to see it in lawn," he says, "but we didn't design it that way, and we don't want it that way. A novice looking at an algae-filled pool during a dry stretch in August may say, 'This looks awful—what are you going to do about it?' My response is, 'See that Common Yellowthroat over there? See the mink that just ran through there and the muskrat building a house? See the goldfinches, the Great Blue Heron, the Cedar Waxwings? This is good stuff.'"

In the long run, the nature of this initial planting won't make much difference. Natural succession will follow its course, and eventually, a century or so hence, Sapsucker Woods will have filled in the area with shrubs and trees. "In time, we want the building to blend into the forest," Scott says. Some elements of that forest will be descendants of the native tree and shrub species planted by the thousands, not only near the Johnson Center but along the course of the Fuller Wetlands: red and sugar maple, white pine, serviceberry, sycamore, willow, oak, dogwood, ash, birch, poplar, hawthorn, black cherry, alder, tamarack, willow—the list goes on and on. Many locations have a mix of planted individuals of native species, other native species that arrived on their own, and patches of older established trees and shrubs protected during construction.

A short walk from the grounds near the Johnson Center takes you to the Fuller Wetlands, created to compensate for the wetland lost during construction. It has already received one form of approval: visitors on the observation deck in early April were themselves carefully observed by a Canada Goose, who had chosen to nest on a nearby island that didn't exist a couple of years ago.

The transformation of this area has been dramatic. Previously, it was an old farm fire pond—small, circular, bounded by mowed lawn—surrounded by a nearly impenetrable tangle of scrubby second-growth shrubs and small trees. "It was fairly sterile," says Scott, "so we said, let's change it, let's extend the



ponds, let's put in islands, let's put a trail out to it, let's put in observation platforms, let's put up nest boxes."

The new wetland is intricate and convoluted, a three-acre succession of miniature pools, joined by a maze of waterways. In effect, it resembles a Japanese garden, one that has been "let go" for a few years. Tiny islands consist of a single massive rock; larger islands support trees and shrubs, some joined to the "mainland" by an isthmus. A peninsula juts into a pond, a rock outcrop thrusts out of the water. There's a cove, a bay, a fjord—an elaborate landscape in miniature, some elements filled with water throughout the year, others seasonally. The visitor sees snags—dead trees, important as a source of cavities for nesting birds, as singing perches, as hawk lookouts, and as habitat for insects sought by bark gleaners—and could be excused for thinking they are the remains of trees that died naturally, but they are not. They are black locust trunks, deliberately "planted" during construction. Tree trunks have fallen into the ponds, and these too look natural, but in fact they were placed as part of the design; in summer, expect to see them lined with sunning turtles. A feature most visitors won't notice is the stone berms that prevent migrating amphibians from clambering onto the roads, where they risk being flattened by traffic.

On the first warm day of the year, in early April, the landscape is thrumming with life and thronged by birds. Clouds of down from tattered cattails catch the sun, drifting toward the pond. A Canada Goose grazes near the Johnson Center's door. It moves its feet in slow motion, lifting one foot deliberately with each step, then the other, its bill chittering quickly from side to side like the lawnmower it is, seeking the first blades of spring grass. From the bridge, floating mats of algae lifted by the recent heavy rain drift slowly toward the pond, suspended at mid-depth in the stream. A plump, blobby pollywog wiggles in the mud, and insects zip across the surface leaving V-shaped wakes like little motorboats. Already, duckweed coats the edges of the stream where the water level has fallen. A walk along woodland pools is accompanied every few steps by the plop of frogs burrowing beneath the submerged wet leaves.

Even at midday, the sounds of birds and other wildlife are everywhere, layer upon layer of sound. From the woodland, a shrill chorus of spring peepers rings out in rising and falling waves, louder one moment, quieter the next.

Punctuating the background of peepers and the purl of water moving over stones we hear the trills of toads and, less often, the gutteral burps of bullfrogs. And from the tops of still-bare trees come the quintessential sounds of spring, the *chinkaree* of Red-winged Blackbirds, along with the twitters of sparrows, the whistled notes of robins, and the quarrelsome skrinch and gurgle of small squads of Common Grackles. At intervals come other sounds–the *hooo hooo hooo* of Mourning Doves, the *WAAAT WAAAT Waat Waat Wat watwatwat* of Mallards, the notes of chickadees, goldfinches, robins, phoebes, cardinals, and an assortment of sparrows, along with the calls of jays, crows, hawks. Visitors see American Bitterns and Green and Great Blue herons stalking the shallows, Wood Ducks and Hooded Mergansers on the pond, Ospreys overhead.

"The birds like it," Scott says. "And that was the whole idea."

Long before the Lab of Ornithology existed, the land it now occupies was part of a forest of an age and character scarcely imaginable today. Early travelers in the region complained of forests so dense they didn't see the sun for days. The botanist John Bartram, passing nearby in 1743, wrote that the branches overhead were so densely interlaced it was "impossible to see which way the wind drives or the clouds set." The travelers spoke in awe of the sizes of tree trunks—a 6-foot-wide beech, a 12-foot-wide sycamore. White pines with trunks 5 feet wide were commonplace. Bears, gray wolves, and mountain lions roamed the woods. Although a Native American trail passed a couple of miles south of Sapsucker Woods and several tribes cultivated small fields in the region, much of the forest surrounding Ithaca was largely untouched by humans. According to an estimate in one study, 99.7 percent of the county where the Lab is located was covered by forest in 1790.

When the first white settlers arrived in 1789, the land's bounty must have seemed inexhaustible. Hunting and fishing were exceptional. American chestnuts grew in the woods, and Passenger Pigeons thronged through the forests in such numbers that their flocks cast dark shadows on the ground as they passed overhead. They nested in the local woods by countless thousands. A local man recalled catching 500 at a time in a 16-by-24-foot net, to be shipped in barrels to New York City.

Land was sold off in farm-sized lots, and generally the owners' first act was to cut down the forest. As the land was cleared of trees, the abundant local waterpower was used to run sawmills; in 1835, an astonishing 79 sawmills operated within 15 miles of Ithaca. By 1875, only about 20 percent of the county was in forest—mostly the steep banks and bottomlands of the ravines, which were generally unfit for agriculture.

Swamps, too, were useless for farming, and it is to this fact that Sapsucker Woods Sanctuary probably owes its existence. An owner of fields that later became part of the sanctuary noted that in two years out of three, his bean fields never made it to harvest—it was simply too wet. But the surrounding landscape was transformed from forest to fields, and by the 1830s, the land that would become the sanctuary was already an isolated patch of woods surrounded by fields, saved from destruction by its slow-draining soils and the fact that the site rests in a slight depression. When rainwater drained in, it tended to stay put, and this is still true, as the Lab's new landscaping attests.

Even the forests preserved from clear-cutting were not pristine. Farm woodlots were considered "shaded pastures" for summer browsing by livestock, and grazing in the woods continued until 1920. Logging didn't end until 1945, by which time many of the great oaks and hemlocks had been felled for timber. Other elements of the primeval ecosystem have already been irrevocably lost. The Passenger Pigeons that swarmed through the local landscape have been gone for a century. The American chestnut, formerly a dominant tree of eastern forests, succumbed to a blight that arrived in the local landscape in the late 1920s or early 1930s; with it went seven species of moth that fed on nothing else. Some decades later, the American elm met a similar

Alder catkins (above) develop in fall and expand into full flower in spring. Native alders grow well in the recently created wetlands. These locust snags (on facing page) look natural, but they were deliberately "planted" to provide perches and nest sites for birds and habitat for the insects sought by bark gleaners and woodpeckers.

Above, the scarlet berries of winterberry, a native holly, provide a winter food for waxwings, robins, and bluebirds (on facing page), among other species.

fate. Neither elms nor chestnuts are extinct, but the dominant role in forest ecology that they played for millennia has ended.

Other forest plants face a depressing litany of serious threats, mainly from invasive species and accidentally imported insects: woolly adelgids, sucking insects related to aphids, are decimating hemlock populations. Although they haven't yet arrived in Sapsucker Woods, these Asian natives are on their way. The beeches in Sapsucker Woods are infested with a species of scale insect from Europe that acts as a precursor to beech bark disease. Viburnums are under attack by viburnum leaf beetles from Europe. Emerald ash borers from Asia threaten ash trees, and Asian longhorn beetles, should they break out of the areas where they are currently contained, are a threat to maples and many other species. In the absence of mountain lions, wolves, and, increasingly, human hunters, deer populations have exploded, affecting the regeneration of species they find palatable. Invasive plants have established themselves in several parts of the Lab's property. Although parts of the sanctuary with continuous canopy cover from mature trees are relatively pristine, others, especially marginal areas and former fields maturing in young second-growth, are heavily infested with agricultural weeds and invasive shrubs such as honeysuckle, privet, buckthorn, and multiflora rose.

Much has been lost, but much remains. Some of the Lab's forests were never clear-cut. They never lost the canopy that shaded the native understory plants, and they were never plowed and planted with crops, which destroys the native plants that provide the seed needed for a population's long-term survival. It is probably because the forest was never clear-cut that Arthur A. Allen, founder of the Lab, was able as a graduate student in 1909 to discover Yellow-bellied Sapsuckers nesting here. It was one of the few local, relatively intact forests, and it was on level ground—an important point if the goal is to attract visitors. Allen noted that the plants and the birds—Canada Warbler, Northern Waterthrush, Pileated Woodpecker, Brown Creeper—seemed typical of more northerly areas and worth preserving. The first purchases for the sanctuary, funded by Lyman K. Stuart, were made in 1953, supplemented later by additional parcels from generous friends and neighbors of the Lab.

The Lab now owns 220 acres, including grasslands, forests, ponds and wetlands created for bird habitat, and second-growth forest in various stages of regeneration from agricultural fields. The current landscape is a pastiche resulting from a long succession of influences—the primeval forest, wholesale clearing, planting of crops (and the weeds that accompanied them), decades of grazing by cows and sheep, the creation and long, slow decline of farm orchards. For the last two centuries, the theme, even in a relatively protected area such as Sapsucker Woods, has been constant change, each development building on the consequences of earlier events and adding a new layer of its own. Today's landscapes result from a host of responses by individual species reacting to an unceasing onslaught of human-mediated changes.

The traditional approach to managing natural areas, and the one generally followed by the Lab, has been to let them manage themselves. Growing scientific awareness of the threats to native ecosystems, however, suggests that this may no longer be appropriate. How, then, should the Lab manage the ecosystems on its property?

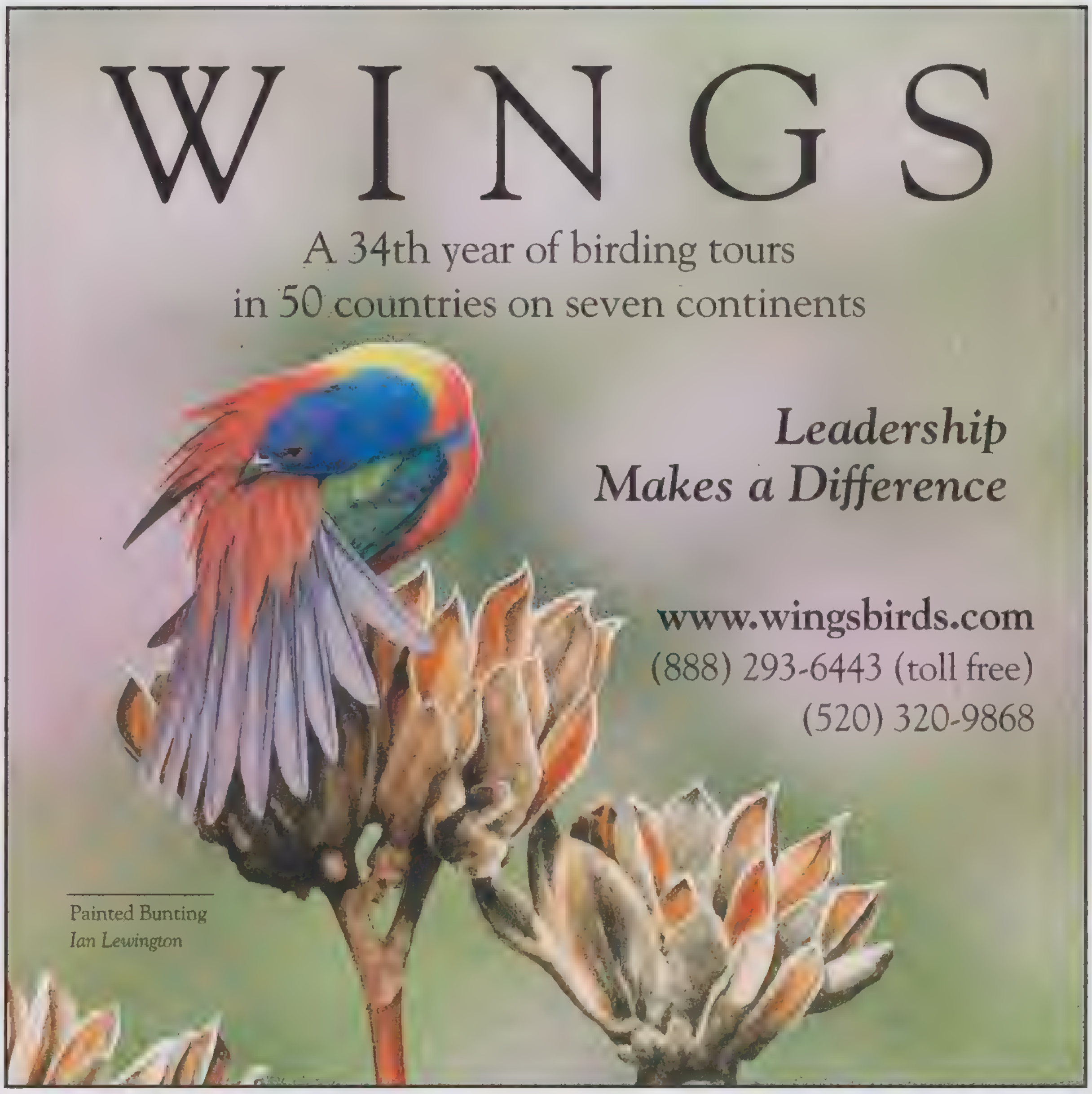
The simple truth is that, due to the loss of native species because of various imported pests and aggressive nonnative plant and animal species, the native ecosystems of the Northeast are slipping away. In a few centuries, the only ecosystems based entirely on native plants will be those that are actively managed to exclude nonnatives. Letting a natural area manage itself may lead to a highly unnatural landscape, one that is largely a product of recent human influences, intended or otherwise.

This situation illustrates the complexities and ironies that continually crop up when you examine the details of managing a landscape for wildlife. Questions that are apparently simple often lack simple answers. For example, the natural "climax" ecosystem of the Northeast is mature forest; if left to manage itself, in a century or two the entire Lab property will return to forest. Is this the best outcome for the birds? A 1986 study of Sapsucker Woods found that, in the previous 35 years, four bird species had experienced declines of more than 25 percent, and 6 warbler species that had once been sporadic nesters (Magnolia, Black-throated Green, Black-and-white, Canada, and Chestnut-sided, and American Redstart) were no longer present. The reason, the author concluded, was that as second-growth shrubland matured into forest on abandoned fields, it became less attractive to these species. Should the Lab, then, work against "natural" succession to ensure that parts of the sanctuary remain inviting to the broadest possible array of birds?

Should an attempt be made to restore the sanctuary to a landscape of native plants? What if a diverse community of birds flourishes best where there are lots of berrying shrubs, including nonnatives? The birds love them—that's one reason they are so ubiquitous. What if, as much practical experience suggests, the most efficient approach to restoring a heavily invaded area to natives is to take the drastic measure of eliminating the existing vegetation, destroying the seed bank, and starting over with natives? Getting to natural can be a highly unnatural process.

As with the recent landscaping near the headquarters, the Lab recognizes that it has an unusual opportunity. As an institution, it can take the long view, thinking ahead in terms of centuries and millennia rather than years or decades. As time passes, refuges devoted to natives will become rarer and more precious. The first step will be to construct a digital map using aerial photography and undertake a comprehensive inventory, not only of birds but of the plant life that forms the foundation of the ecosystem. You can be sure that decisions will accord with the Lab's mission—"to interpret and conserve the earth's biological diversity through research, education, and citizen science focused on birds." But the Lab leadership faces many choices and would be interested in hearing from members—what would you do? ■

Dan Otis is a graduate student in horticulture at Cornell University and lives in Ithaca, New York. Marie Read is a freelance photographer and author who lives in Freeville, New York.



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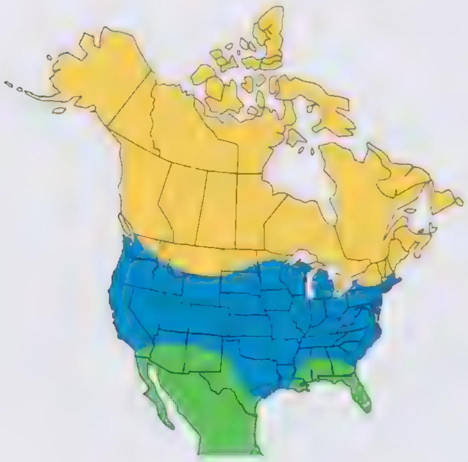

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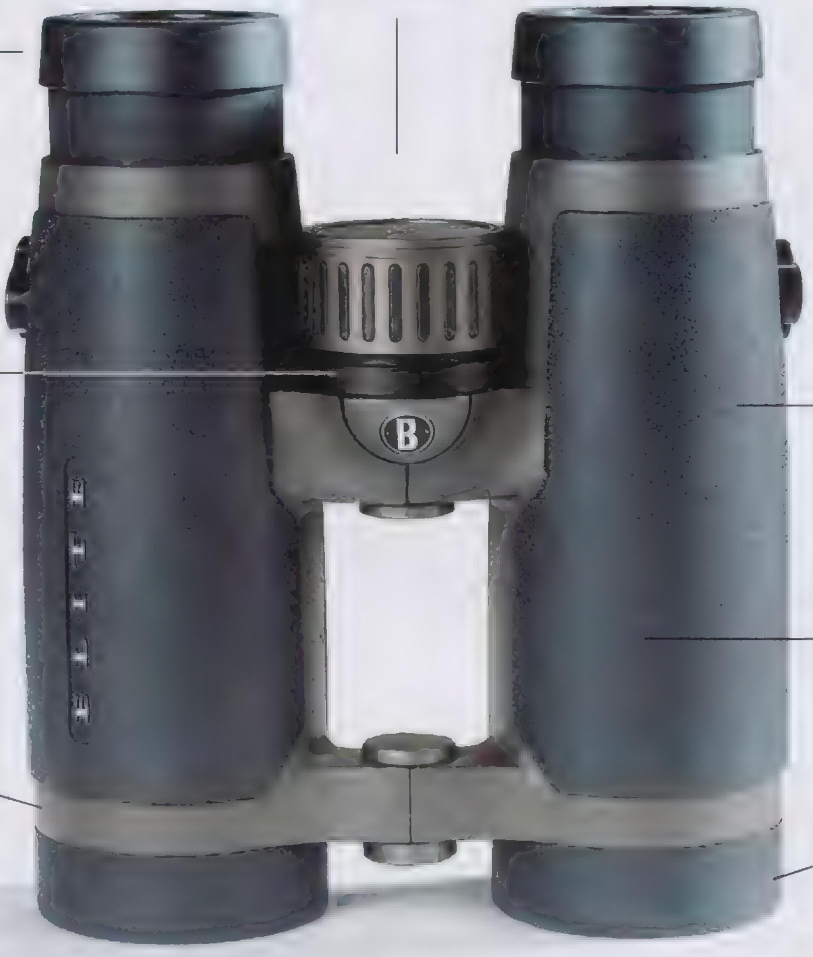
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The SECRET LIVES *of* SAPSUCKERS

BY LAURIE S. EBERHARDT AND DEANNA CSOMO McCOOL

Sorting out the mysteries of the behavior and ecology of the Yellow-bellied Sapsucker

We strained our ears, trying to locate the constant *yak-yak* of young Yellow-bellied Sapsuckers over the sound of the wind in the aspen leaves. We knew the nest would probably be in one of those big aspens, but which one?

My assistant, Peter Martin, and I knew that once we found the nest tree, we could use it to locate active sap feeding sites of sapsuckers. If we could locate an active feeding site, maybe we could solve one of the bird's mysteries.

Our patience in this northern Michigan forest was soon rewarded. We saw a gray torpedo-shaped body flash into the nest, and immediately knew in which direction a pair of sapsuckers had probably opened a sap well. Once they open a sap well, they dip their load of insects into the oozing liquid just before flying back to the nest.

Opening the sap well is the key to the process. Other birds don't do it. Bees can't do it. Only sapsuckers can do it—and this is the mystery we're pursuing. We don't know precisely how they make the sap flow.

As their name suggests, the Yellow-bellied Sapsucker *(Sphyrapicus varius)* eats sap, in addition to insects and berries. From March through September they live in forests from Alaska to the northeastern United States, with some as far south as the southern Appalachians. During fall migration they fly to the southeastern United States, Mexico, Central America, or the West Indies.

Past scientists have studied Yellow-bellied Sapsuckers. Lawrence Kilham conducted exhaustive studies of the bird during the 1950s and 1960s, with an emphasis on breeding behavior and tree selection in New Hampshire and Maryland. During the early 1970s, James Tate, Jr., studied the bird's foraging behavior.

These studies have shown that both sexes participate in excavating the nest, and the female usually lays between four and seven eggs. Incubation lasts for 12 to 13 days, with the male spending his nights on the nest and sharing duties with the female. The adults feed their nestlings diets of insects dripping with phloem sap, and the young leave the nest about three to four weeks later.

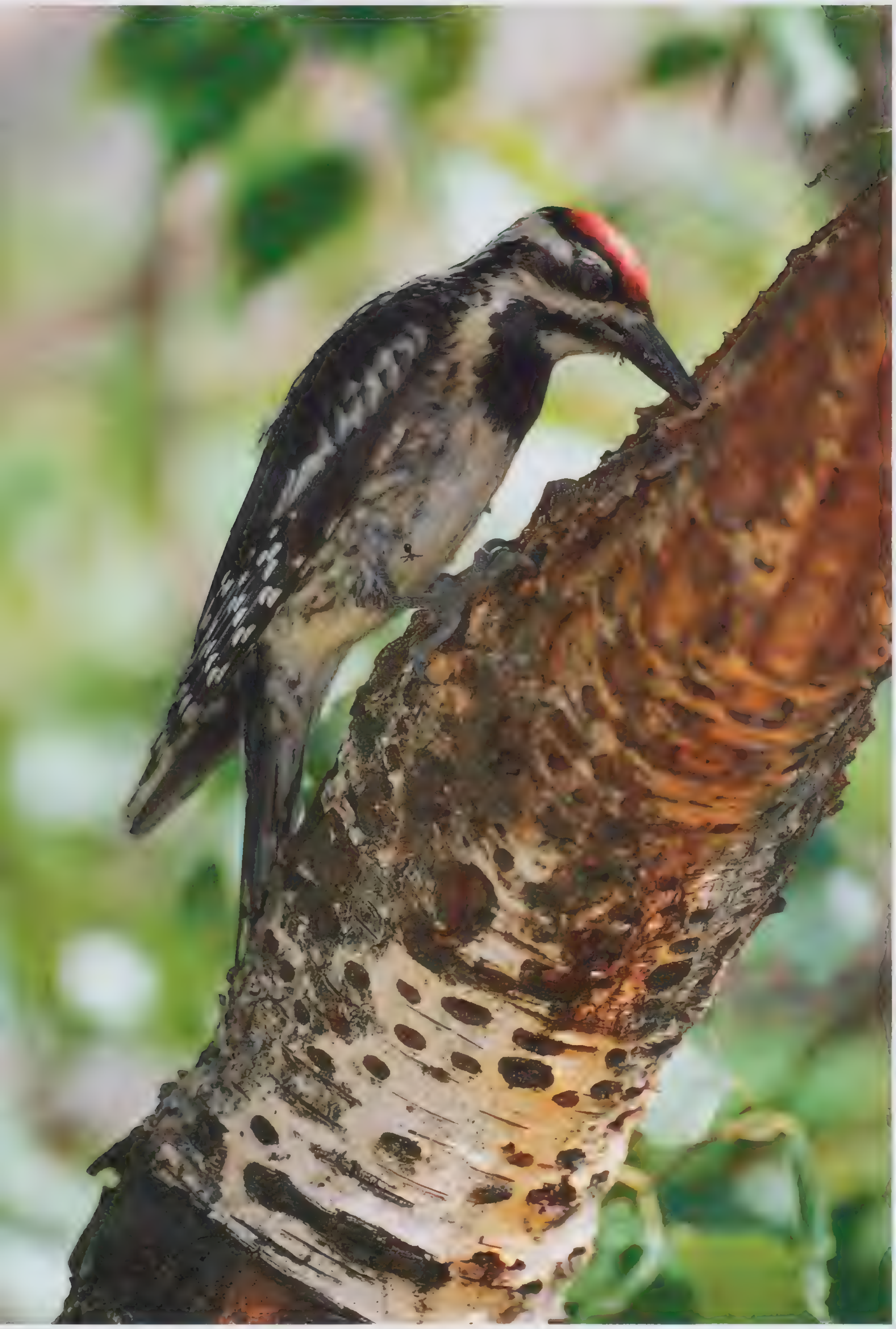
Although they extract sap from dozens of different tree species during the year, they prefer certain trees—such as birches, maples, or june berries—within their breeding territory. Our breakfast of pancakes and maple syrup became a distant memory as we watched the adult sapsuckers fly to their nest to feed their young. Our maple syrup is derived from the dilute xylem sap of sugar maples, but Yellow-bellied Sapsuckers eat two different types of sap: xylem and phloem.

Xylem sap carries water up to the leaves of the tree. In the spring it carries stored sugar, 2 to 3

A Yellow-bellied Sapsucker (right) feeds at a sap well. Sapsuckers are the only birds that create these telltale borings.

MARIE READ

MARIE READ



It's still a mystery how sapsuckers get phloem sap to flow. The birds may have an enzyme in their saliva that can overcome a tree's defenses and induce the sap to flow.

percent at best in maples and birches, to growing shoots.

The second kind of sap, called phloem sap, is much more nutritious. Phloem sap moves sugars down from the leaves to storage places such as the roots, and can contain up to 20 percent sugar and some proteins.

Sapsuckers create different sap wells for each. They retrieve xylem sap like we do, basically by poking a hole into the tree's sapwood. When Yellow-bellied Sapsuckers take the xylem sap, they drill horizontal rows of small, round holes. These holes can be seen in trees along their migration routes as well as on their breeding grounds.

To obtain the phloem sap, the birds peck an array of vertical rectangular holes, just through the bark to the cambium layer of the sapwood. Although humans can easily coax xylem sap to flow from holes in the spring, we cannot induce the phloem sap to flow. It travels in the thin layer of living cells just under the tree's bark.

Yet sapsuckers don't have a problem obtaining phloem sap—we watched a pair of sapsuckers bring loads of insects dipped in rich phloem sap to their nestlings every few minutes.

Several years ago I tried to obtain samples of phloem sap from trees, just as it appeared the sapsuckers did. I used a sharp knife, several types of drill bits, an awl, and a hole-punch. Dozens of dry holes later, I concluded that sapsuckers must be doing something more than simply pecking holes in the bark.

Like blood is to humans, phloem sap is to trees—and they protect it. When I cut through the living cells that carry phloem sap, phloem proteins and a carbohydrate called callose blocked the disturbed cells, preventing sap loss. I suspect that to overcome the tree's defense of phloem, sapsuckers have a novel enzyme in their saliva that can unblock the clogged tissue, inducing sap to flow.

In 2003, we tried to collect saliva samples from living birds for chemical analysis, with very little success. This past summer our new strategy was to collect samples of sap—and hopefully, saliva—immediately after the birds processed their sap holes with pecking and licking.

To accomplish this, we had to locate an active sap well. Armed with two-way radios, we staked out our newly discovered nest.

"Adult female leaving the nest!" Peter's voice crackled through the radio. I quickly scanned the forest below the canopy. After a fleeting fly-by, I was soon rewarded with the sounds of soft pecking on a nearby birch tree.

There, about 25 feet up, the female worked in a wet area on the tree trunk with insects buzzing around her head. The insects were waiting for a chance to steal some sap, and now we were going to sample some as well.

After setting up a ladder, I crouched at the bottom of the tree, waiting, the northern Michigan breeze rustling the canopy. Another sapsucker came in for a quick visit, dipping his beak into the sap well with a load of insects before flying off. It wasn't the hole "processing" that we were waiting for.

After more waiting, his mate appeared and started pecking and licking one of the holes. I had to react fast. Hoping he left saliva in the newly processed hole, I kept my eye on it as I crawled 25 feet up to the sap well. I wiped the hole with a sterile swab before heading back to earth. I placed the swab into a stabilizing buffer and immediately put it on ice to send to a chemist for analysis.

John Gerwin, curator of birds for the North Carolina Museum of Natural Sciences, is part of a group of researchers studying the Yellow-bellied Sapsucker in the Appalachians. He is particularly interested in the mechanics the bird uses to create the sap wells. Although an enzyme may be a key to their success, Gerwin says he can't rule out unique mechanics.

Once Gerwin stood 10 feet from a sapsucker that was opening a well at eye-level. For two hours, the sapsucker pecked at the hole, holding its head at an angle and turning almost 180 degrees with each peck.

"They peck so fast, it's like a hummingbird's wings," Gerwin says. "For them to peck so fast—and make a living off it—is just amazing."

Unfortunately Gerwin didn't have access to a video camera to document the bird. Next year he hopes to capture the event on digital tape and analyze the movements.

The mystery of sap extraction, however, isn't the only one surrounding the sapsucker.

Researchers are analyzing some tissue samples from northern and Appalachian Yellow-bellied Sapsuckers to determine whether they are genetically isolated. Until DNA from several birds is analyzed, scientists are using behavioral clues as a guide.

Although I witnessed sapsuckers defending their sap wells from out-of-territory sapsuckers in northern Michigan, researchers in the Appalachians witnessed cooperation at the sap wells.

Scott Pearson, a biology professor at Mars Hill College in Asheville, North Carolina, has done research with Gerwin and noticed that where there's a tasty tree full of sap, the birds seem to share.

"The birds regularly cross territories, and different pairs of birds feed at the same tree," Pearson explains. "That tree is presumably within someone's territory."

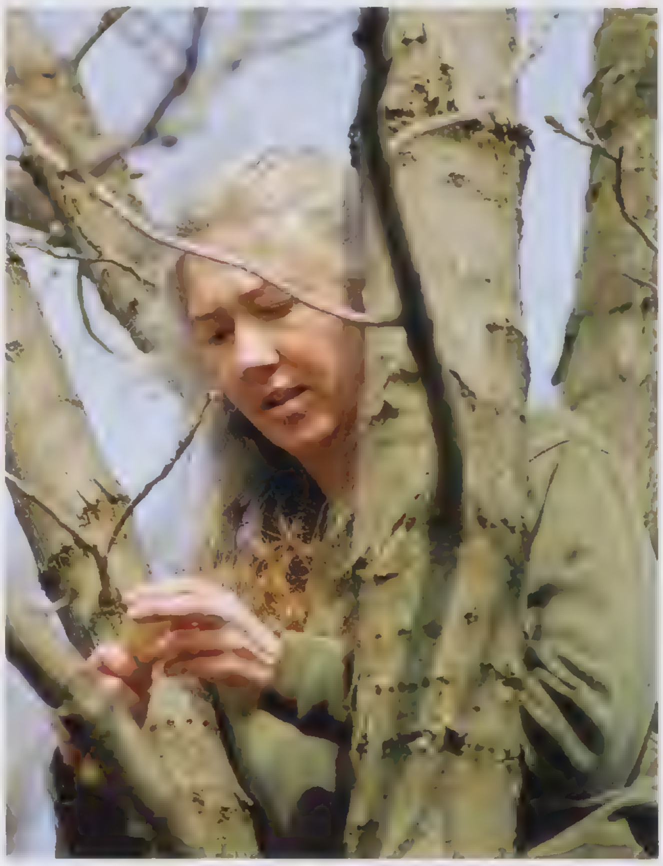
At one point, Gerwin noted five sapsuckers feeding from one tree, and none were juveniles. The three females and two males ate insects and licked sap, sometimes squabbling but always returning to their feeding. In all, Gerwin saw seven birds within 50 yards of this tree.

Gerwin, who has observed Yellow-bellied Sapsuckers in Minnesota as well as in the Appalachians, is surprised about the differences in the birds' vocalizations. He describes the Appalachian birds as "so quiet and tame." This has led some people to believe there are few sapsuckers in the Appalachians—when in fact, they are not uncommon.

"In Minnesota, there were sapsucker calls and drumming sounds everywhere . . . about every 200 yards," he says. "They were much more territorial and vocal."

Is it possible that Appalachian sapsuckers can obtain sap more easily, therefore allowing them to spend less energy on defense? That's another question for which we don't know the answer. Gerwin has also noticed Yellow-bellied Sapsuckers in the Appalachians shaking the lichen on trees to capture insects. I have not witnessed this behavior during my research in northern Michigan.

As an ornithologist, my primary interest is in the birds. But occasionally timber companies and landowners see Yellow-bellied Sapsuckers as nuisances, convinced that they damage or kill trees. We don't yet know which comes first—a weakened tree that is attractive to sapsuckers because it "gives up" its sap more easily, or a tree weakened by sapsuckers as a result of their pecking. Dying trees mobilize more amino acids in their sap, so perhaps sapsuckers choose dying trees for better nutrition.


RICHARD FIELDS

Author Laurie Eberhardt's nimbleness in the treetops allows her to view previous sapsucker activity and collect samples of sap for further study.

By the way they create their sap wells, sapsuckers essentially "girdle" the tree. A new squarish-shaped phloem sap hole is made every few days above old holes, giving the effect of long, vertical lines of holes in a tree by the end of the season.

Sapsuckers begin a new hole as a small, eye-shaped slit in the bark. They enlarge the hole from the bottom up with repeat visits. Each hole flows with phloem sap for three to five days before drying up. Because phloem sap in a tree's trunk is flowing down from the leaves to the roots, the birds are essentially cutting into the fresh stream of phloem sap as they work their way up a tree's trunk with new holes. By cultivating several vertical lines of holes at the same time, they might be able to dam up the phloem stream in the tree so they can increase their chances of getting good sap flow above the dam.

Kilham was curious about why sapsuckers concentrated on a single tree here and there, while leaving many trees untouched. During the early 1960s he followed three territories of Yellow-bellied Sapsuckers and discovered the birds singled out wounded or weakened birches.

Still, his research isn't definitive. Although the birds he watched preferred damaged trees, he documented sapsuckers drilling holes into nearby "satellite" trees. There was no obvious sap flow from these trees, but the drilling may have weakened a healthy tree, creating a possible new feeding site for the following year.

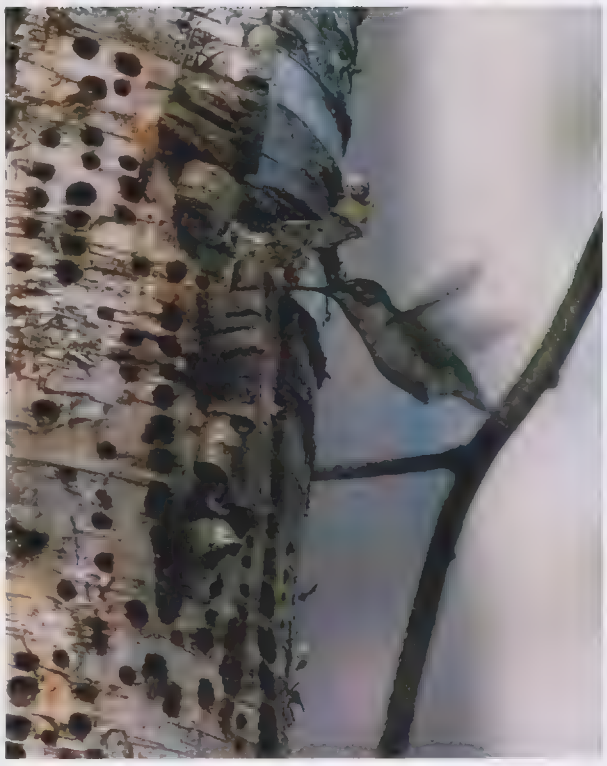
The Yellow-bellied Sapsucker's place in the forest community is important. Their feeding holes create good opportunities for other species of birds and mammals. Ruby-throated Hummingbirds frequent the trees to partake of the phloem sap they cannot harvest themselves, possibly even extending their range as a result of this novel source of food. Warblers, other woodpeckers, chipmunks, squirrels, and many insects readily take advantage of this otherwise unavailable food source.

"It's really funny to watch the hummingbirds, squirrels, and even nuthatches come to get sap," Gerwin says. "I even saw a Downy Woodpecker try to get sap."

The researchers in the Appalachians are trying to understand habitat selection and a variety of other issues affecting the Yellow-bellied Sapsuckers that live in their area.

"Where are they? How many are there? Are they plentiful, or patchy and spotty?" Pearson asks. "We want to know what kind of habitats they are using. A number of bad things are happening to the northern hardwood forests, and this raised a number of conservation questions."

With a grant from the U.S. Fish and Wildlife Service, the group collected data from more than 500 surveys done by both volunteers and professionals to determine what type of landscapes they prefer. The group is also conducting a finer-scaled study to determine nesting and territory habits among Yellow-bellied Sapsuckers.


COURTESY LAURIE S. EBERHARDT

When flowers are scarce, Ruby-throated Hummingbirds take advantage of sap wells created by sapsuckers.

They have used radiotelemetry transmitters on the birds with limited success.

"One bird kept it on for two weeks, but most only had it on a couple of days," Pearson says.

I spent nearly a month this past summer stalking the sapsuckers for their freshly licked holes. Regardless of how the chemical analyses of our samples turn out—whether they have a special enzyme or not—mysteries associated with the Yellow-bellied Sapsucker will continue to exist.

Have they divided into an Appalachian subspecies? Does their sap resource differ from north to south? Do sapsuckers really damage trees, or are the trees they choose already declining? And—the focus of my research—how do they make phloem sap flow?

"No matter how hard we try, we're never going to get inside a sapsucker's head," Pearson says. ■

Laurie S. Eberhardt is an ornithologist and associate professor of biology at Valparaiso University in Valparaiso, Indiana. She has studied sapsuckers since 1994.

Deanna Csomo McCool is a freelance journalist based in northern Indiana. She is president of the South Bend-Elkhart Audubon Society.

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"Black" Merlin
(Falco columbarius suckleyi)

Coastal British Columbia
March 7, 2005

Kenn Kaufman is a legend among birders. He is a regular contributor to several publications and the author of numerous books, including Kaufman Field Guides.

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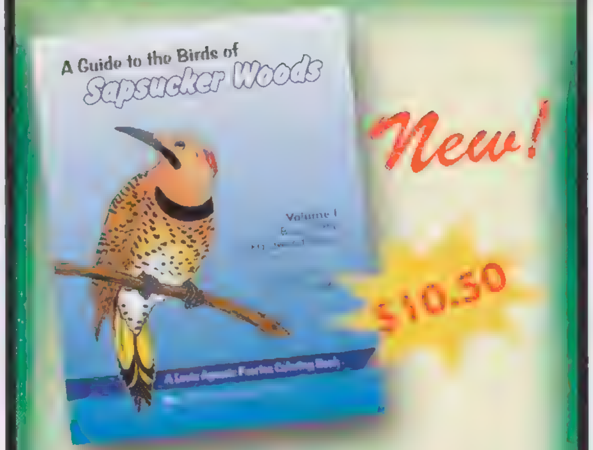

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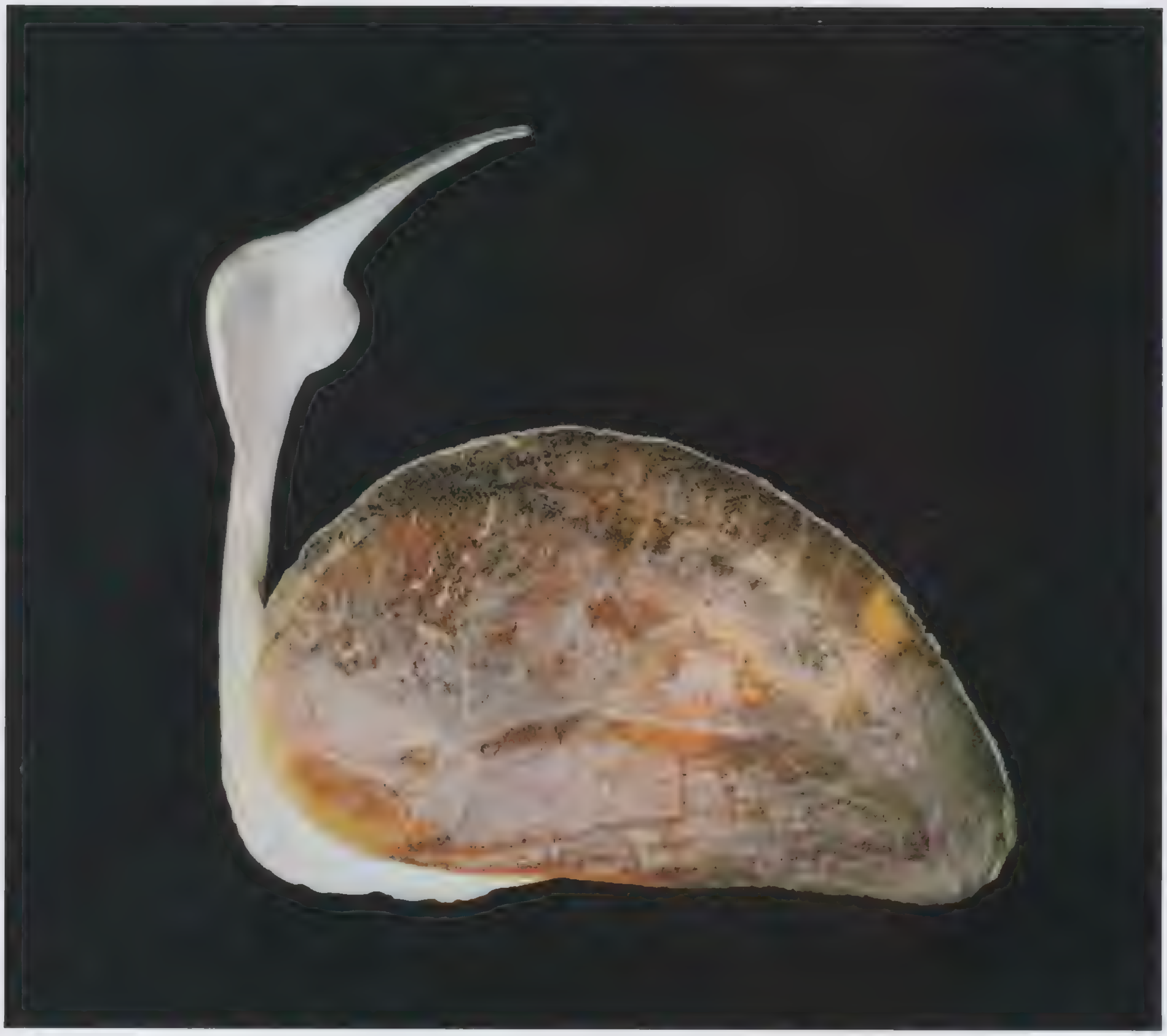
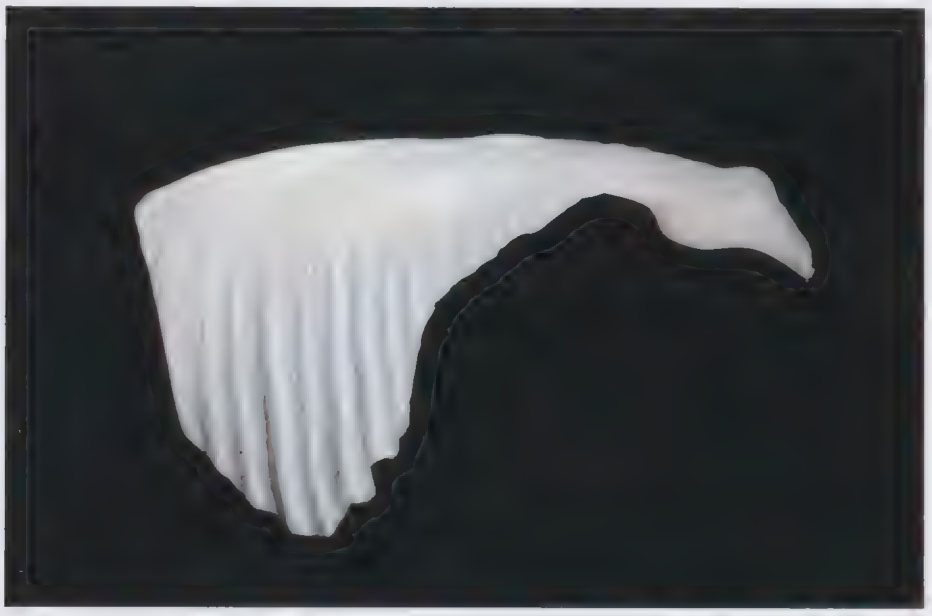
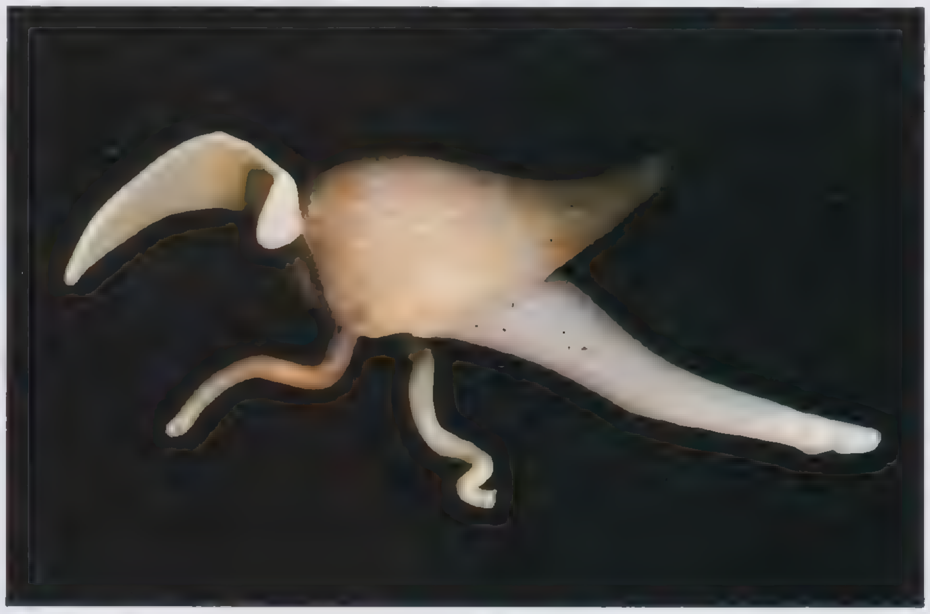


SEABIRDS?

Photographs by Thomas Eisner

Famed Cornell ecologist Thomas Eisner recently created a series of photographs using pieces of shells that suggest bird shapes. We are pleased to present a trio of these whimsical images. Director of the Cornell Institute for Research in Chemical Ecology, Eisner is a world authority on animal behavior, ecology, and evolution, and is one of the pioneers of chemical ecology, the discipline dealing with the chemical interactions of organisms. ■





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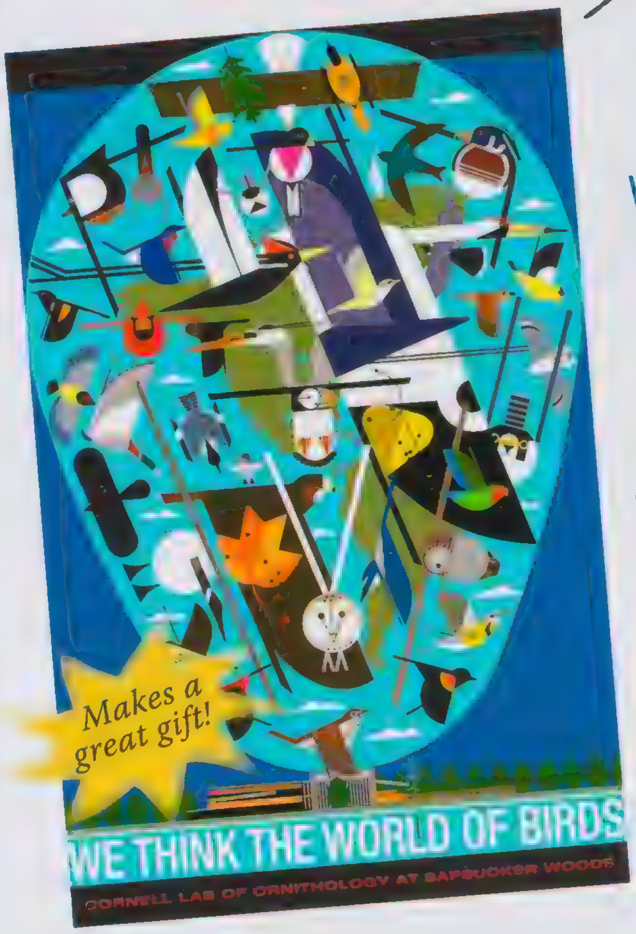
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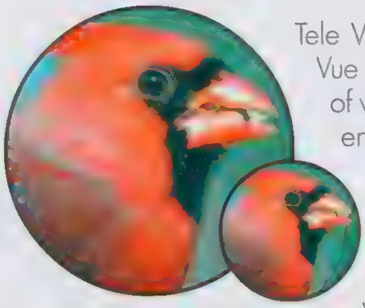

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The Catbird Seat

WHY THERE ARE BIRDS

by Pete Dunne

“Uncle Peter, why are there birds?”

“Excuse me?” I said, turning and looking into a face so steeped in innocence that Shirley Temple would have traded up.

“I said,” replied the sinister little cherub, her face now contorted by a beguiling pout, “Why are there birds?”

“Uhhhhhh . . .” I’m not often at a loss for words, but the kid stopped me. I’ve been studying birds for 48 years and had never before examined the reason for their existence. But there seemed no way to avoid a fundamental question so innocently asked.

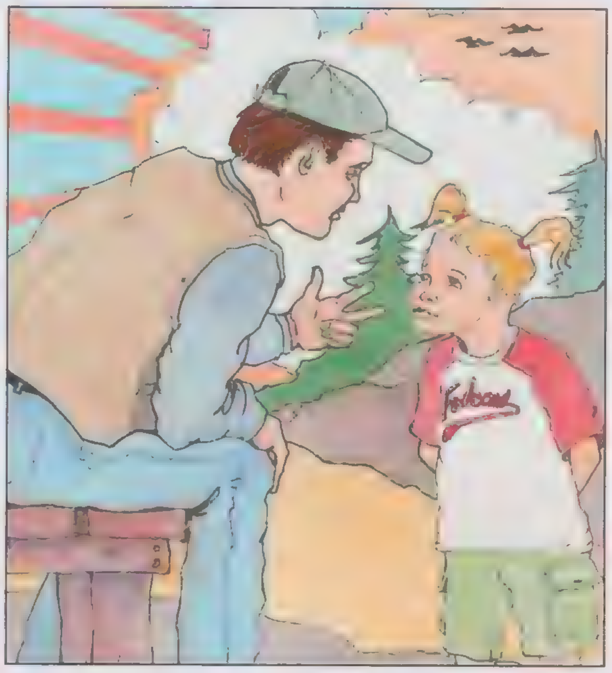
“Well,” I considered saying, “birds are here to keep the farmers’ crops from being consumed by harmful insect pests.” It was a half-truth exhumed from a grammar school science text. The assertion was usually supported by speculative estimates of grasshopper reproductive capacity, which—given 100 percent survival and three or four generations—would result in our planet being covered by a six-foot layer of “harmful” insects.

But birds were here long before our species figured out the beneficial relationship between dirt and seeds. It didn’t seem plausible that birds were put here in anticipation of the birth of agriculture. I considered another possibility.

“Well,” I started to say, “birds fill an important ecological niche.” Predatory birds and prey birds are vital components of the food chain and key elements in the balance of life on earth.

But one look at those innocent eyes disclosed the folly of this discourse. Who wants to be the first to tell a six-year-old that baby robin is on the menu?

“Birds are here,” I almost said, “because without birds there would be no nonstop flights to Orlando.” It’s unlikely that our earth-bound species would have grasped the potential of an airfoil without having seen birds in flight. And could civilization as we know it exist without an airlink to a six-and-a-half-foot mouse with an inane grin?



“I’ll bet you like Mickey Mouse,” I asserted.

She shook her head.

“Shrek?”

She shook her head again.

Sigh.

“Okay,” I semi-postulated. “Birds are here because without them a lot of professional sports teams wouldn’t have names.” What would happen to season ticket sales if fans were entreated to root for the Philadelphia No Names or the Baltimore No Such Animals or the Seattle Fill in the Blanks?

And literature! Consider how the absence of birds would change the face of literature. Do you think a book entitled *To Kill a Rutabaga* could have made the *New York Times* Best Seller List? Would Edgar Allen Poe be remembered if the line read: “Quoth the thirteen-lined ground squirrel, ‘Nevermore’?”

I was beginning to get desperate now. The attention span of the average six-year-old lasts about as long as innocence. I was frantic to come up with something that this spawn of suburbia could . . .

“Lawn care products,” I almost shouted. “No advertising agency worth its guile would consider airing an ad promising richer, greener, lusher lawns without a Mourning Warbler or a Savannah Sparrow singing in the background.

“I’ll bet you like helping your daddy cut the grass,” I said.

“Uh-uh!” she said, screwing up her face the way six-year-olds do when grownups say something really stupid.

I knew I was facing failure. The uncle who knew everything about everything was stumped. My mind raced. I grasped at straws.

“There are birds because . . . because . . . because without birds, cats wouldn’t sit on window sills . . . car washes would go broke . . . bad little boys would stop dreaming of getting BB guns for Christmas presents . . .”

Such a simple question. Such an elusive answer.

I finally just came clean and told her the truth as I knew it. When all else fails, I reasoned, try honesty.

“There are birds, Sweetie, because without birds your Uncle Pete wouldn’t have a job.”

“Oh,” she said, studying the ground and pursing her lips, then nodding sagely.

“Uncle Peter, why are there presidents?”

Anybody want to jump in here? ■

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SPRING 2006 VOLUME 25 NUMBER 2

GREETINGS FROM SAPSUCKER WOODS

I have to laugh every February 2 when Punxsutawney Phil, the famous weather-predicting groundhog, lets us know how much longer the snow squalls and bitter cold will hang on. This year he apparently saw his shadow and immediately dashed back into his burrow, ensuring us another six weeks of winter weather.

Here in Upstate New York, mid-March would actually be a very early end to winter. Most years, we have snowstorms well into late April, and once we even had several inches of snow on May 12. (I remember it was Mother's Day and my mom was visiting from California).

As I write this column, it is March 16, and it was snowing this morning on the way to the Lab. But the signs of spring are undeniable. Outside my office window, I see some Common Grackles and several Red-winged Blackbirds at the feeders, competing for seeds with the cardinals, chickadees, and other birds that have been here all winter. On Sapsucker Woods Pond, which is thawed now, I saw a pair of Hooded Mergansers a few days ago. And on one unseasonably warm night earlier this week, I heard the shrill sounds of spring peepers in the woods behind my house.

Of course, for me it's not officially spring until the warblers arrive in force, filling Sapsucker Woods with their distinctive songs. That's when I'll know it's safe to hang up the winter coat and start enjoying the warmer weather.

Tim Gallagher
Editor-in-Chief

Cover: With its unique color pattern—black on the front with large white patches on the back and a buff nape—an adult male Bobolink is unmistakable. Photograph by Brian Small.

Right: A Spotted Antbird clings to a branch overlooking Panama's famed Pipeline Road. These tiny birds make their living by capturing insects fleeing from swarms of army ants. See article on page 14. Photograph by Marie Read.

Back cover: The Squirrel Cuckoo is but one of the many fascinating birds to be seen in Panama. This issue features a column on page 8 and an article on page 14 about this remarkable birding hot spot. Photograph by Tom Vezo.

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LIVING BIRD
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Cornell University

Letters

MARIE READ

I'M LISTENING

I was very intrigued by Jack Connor's In the Field column ("Listen Up") in the Autumn 2005 issue. I must be musically adept, because ever since childhood I have always identified birds by song. So I immediately thought, of course I have heard the female cardinal's song. Hmmm, my feeders are busy at 3:30 P.M. and there are three pairs of Northern Cardinals here. As you may imagine there is quite a bit of chatter from the chickadees, titmice, sparrows, Blue Jays, and the cardinals. I am watching those beaks very carefully, but so far I cannot be sure who is singing *chip-chip* from the bushes. Thank you for this great project!

Nancy Caswell
Yorktown Heights, New York

PASS IT ON

In October 2005, I went to New Zealand on my first Elderhostel trip. There is a tiny museum on North Island, where we were told all about the kiwi and shown a model of the bird and an egg. When the docent finished, we went behind a black curtain, into a darkened area where there was a kiwi behind a fenced area. When I returned home following the trip, the latest *Living Bird* had arrived. I was stunned to open it and find the fascinating article and photographs of real kiwis ("A Most Unbirdlike Bird" by Tui De Roy, Autumn 2005). After reading it a couple of times, I sent it to our New Zealand leader for the Elderhostel trip. She told me that the article would be passed around. I was so pleased that this gorgeous article would be seen by others.

Ninarose Mayer
Altadena, California

FILM VS. DIGITAL

Marie Read's article on film vs. digital photography ("Can't Beat 'em? Join 'em!" Winter 2006) is very interesting and informative. I agree with nearly everything she says, and her presentation is easy to understand, despite the high-tech facets of this new field. She asked readers to look at the two goldfinch pictures on pages 10 and 11 and offer our input on which one we liked best. I like the picture taken with film better. The colors are richer and more vivid than in the digital capture. The yellow on the goldfinch is a richer, truer yellow in the film than in the digital capture. The yellow in the digital goldfinch has a greenish tinge to it. The echinacea bloom on which the bird is perched has a richer, brighter, and more vivid rusty orange center than in the digital picture. Likewise, the yellow blossoms of the black-eyed Susans are brighter in the film version. They are duller in the digital. Finally, the purplish glow in the soft hazy background comes through more distinctly in the film version, creating a nice effect. Digital is getting better and better all the time, but it still doesn't quite measure up to film. Maybe soon it will.

Jan Renfrow
Saint Maries, Idaho

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

BirdNews

Ivory-bill Video Analyzed

TIM GALLAGHER (2)

David Luneau (center) and Lab director John Fitzpatrick measure the tree from which an Ivory-billed Woodpecker flew in Luneau's April 25, 2005, videotape.

The Lab of Ornithology recently completed a second in-depth analysis of David Luneau's woodpecker videotape, shot on April 25, 2004, in eastern Arkansas, which Cornell researchers have determined shows an Ivory-billed Woodpecker in flight. The analysis was conducted by Martjan Lammertink, Ken Rosenberg, John Fitzpatrick, David Luneau, Tim Gallagher, and Marc Dantzker and is posted on the Cornell Lab of Ornithology web site at <www.birds.cornell.edu/ivory/rediscovery/support>.

This may well be one of the most intensively studied videos ever taken. The new web pages contain a point-by-point analysis of the now-famous video clip by David Luneau of the University of Arkansas at Little Rock. The video analysis expands on the article published in *Science* magazine in April 2005 and presents numerous video clips that allow the public to examine the video data and the authors' original conclusions for themselves. "Even after the original announcement of the rediscovery, we kept going over our evidence and finding new ways to put it to the test—not only to answer questions others might have, but to continue to test the veracity of our own conclusions," said John Fitzpatrick, director of the Cornell Lab of Ornithology. After comparing the Luneau video with more than 60 videos of Pileated Woodpeckers now in their possession, Cornell scientists remain convinced that the Luneau video is unique and distinct in a number of characteristics. The bird is fully consistent with the plumage pattern and flight behavior of Ivory-billed Woodpecker, thus providing visual confirmation of a number of well-described sightings of that species in the area during 2004 and 2005.

We invite Lab members to let us know what you think of these new pages, especially after you examine the video clips provided and move through them frame-by-frame. Enjoy these new pages as well as some of the other new accounts added to the site from volunteers and leaders in the search. Send email comments to <livingbird@cornell.edu>.

CONSERVATION AWARD

The Lab of Ornithology's own Tim Gallagher, editor-in-chief of *Living Bird*, was honored recently with the Explorers Club's Conservation Award for his role in the rediscovery of the Ivory-billed Woodpecker in February 2004. Tim (at right below) and his colleagues Bobby Harrison (center) and Gene Sparling (left), who also received the award, were honored at the club's annual dinner in New York City on March 18, 2006.

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Flying Field

A WEEK IN THE TROPICAL TREETOPS

by Mel White

Visitors to Canopy Tower Lodge get a toucan's-eye view of the Panama rainforest

“We have birds that sound like frogs, and frogs that sound like birds,” guide Carlos Bethancourt tells us on our first morning at Panama's Canopy Tower lodge.

Frogs that sound like birds—that's good. That's convenient. That means that if we're out on a trail on our own, we won't feel so guilty about not recognizing the odd *chirp* or *cheep*, about not knowing whether we're missing something like a Black-crowned Antpitta or a Lance-tailed Manakin.

“Probably just a frog,” we can say, peering into the forest through the palms and cecropias and figs and ceibas.

And through whatever the rest of those trees are. Diversity is the name of the game here at latitude 9° N, for the relentlessly lush vegetation as well as for the birds. All the antbirds and antwrens have similar calls, all the antshrikes have similar calls, all the woodcreepers have similar calls—and there are so many of each, skulking in the dark, viny woods.

As dawn breaks the first morning, I've already become familiar with one call. It sounds just like the *poink* of the Paleolithic-period video game Pong, repeated endlessly right outside my window. All . . . night . . . long.

“Hey, Carlos, there was this one call last night . . .” I start.

“You mean the one that sounds like a video game?” he asks, anticipating my question. “That's a frog.”

Apparently quite a few people before me have noticed this sound, too. It's not annoying, really; if anything, it has a hypnotic quality. It's just persistent. Very persistent.

We're on the roof of the Canopy Tower, a spot all nine members of our group have dreamed of since we booked this trip months ago. This is, in fact, one of the most famous locations in all Neotropical birding—for the treetop-level view it provides and for the gigantic yellow ball perched on the roof.

For 30 years, this was a radar installation operated by the United States military in the Canal Zone. In 1995 the tower was closed, and soon a company was awarded a concession by the Panamanian government to convert the building, set in the middle of what is now Soberanía National Park, into an ecotourism lodge. The electronic guts of the radar are gone, but the dome remains, atop a four-story metal building much modified since the drug-plane spotters left.

Last night, as our Continental jet approached Panama City's Tocumen Airport, we saw the yellow sphere from the air, like a tennis ball floating in a sea of green. Twelve hours later, not even having had breakfast yet, we are enjoying the residents of the surrounding forest. Keel-billed and Chestnut-mandibled toucans pick fruit from the cecropias, where a Slaty-tailed Trogon sits quietly. Pairs of Green Shrike-Vireos, Green Honeycreepers, and Fulvous-vented Euphonias flit from branch to branch. Mealy and Blue-headed parrots screech as small groups fly over the treetops.

“Plain-colored Tanager,” our poet and social activist says. “That's kind of a demeaning name, isn't it? Well, I think it's a very attractive bird, in an understated way.”

Uh-huh. It takes a discerning eye and refined sensibility to appreciate a Plain-colored Tanager sitting on the same branch as a Collared Araçari.

It's the first week of July, and our group is here taking advantage of what the Canopy Tower calls “green season” rates, which translates into a package of accommodations and daily guided birding field trips offered more cheaply during the rainy season. I had been nervous before this trip, wondering if the weather might put a significant damper on our birding.

We've certainly been fortunate to get Carlos as our guide for the week. Though decked out now in expensive optics, a CD player, and a laser pointer, he started learning birds with only his eyes, ears, and curiosity.

“When I was a boy, maybe eight years old, I found a nest with beautiful blue eggs,” he says. “They were from a Clay-colored Robin. I wanted to see what kind of eggs other birds had, so I started walking through the forest, trying to find nests. I would ask my mother and grandmother the names of the birds.”

After breakfast (good food and lots if it, like all the meals at the lodge), our first field trip is simply a walk down the entrance road, which snakes through the forest a bit over a mile between the tower and the Panama City-Gamboa highway. At least we try to start walking: it takes quite a while to get out of the parking lot, since we see Blue-chested Hummingbird and White-vented Plumeleteer at feeders and Squirrel Cuckoo, White-necked Puffbird, Masked Tityra, and Blue Dacnis in the trees. And what's that tubby speckled thing?

“Female Blue Cotinga!” Carlos calls. Everyone who visits the lodge hopes for the gorgeous male, but we'll take this gal—for now.

On down the road we find typical birds of Soberanía National Park, including Broad-billed Motmot, Violaceous Trogon, Plain Xenops, Western Slaty-Antshrike, Dot-winged Antwren, Chestnut-backed Antbird, Red-capped Manakin, and Long-billed Gnatwren. High in one of the magnificent tropical trees, a Black-headed Tody-Flycatcher plays hide-and-seek among the epiphytes—maybe not so typical, since it's the only one we'll see all week.

Just about the time we begin considering, and dreading, the walk back up the steep road, around the corner comes the lodge's "Rainfomobile," a flatbed truck with seats in the rear, bringing ice chests full of drinks and snacks, as well as a ride up the hill. And so we learn something else about the tower's birding package: though we'll do plenty of walking (and sweating in the ultrahigh humidity), nobody's going to go hungry or thirsty, and Carlos and other staff members will be doing everything they can to see to our comfort.

After lunch (and time for naps, note-taking, or roof-sitting), we ride the truck to Ammo Dump Ponds, a wetland where the target birds include Rufescent Tiger-Heron and White-throated Crake. We find them, as well as Yellow-headed Caracara, Wattled Jacana, Panama Flycatcher, and Crimson-backed Tanager. Of that last one, our camerawoman says, "I feel like it's Elvis on velvet," which sums up the gaudy effect quite well.

By dinnertime (free soft drinks, fruit juice—and wine!), we've learned the lay of the land, tower-wise. The first floor has a small shop and an office with a computer for email; the second and third floors are bedrooms (plain and non-air-conditioned, but clean and nicely kept up); the fourth floor is part dining room, part library, and part lounge for loafing, talking, or reading. Above it all is the roof, for birding, preprandial drinks, or watching sunrises and sunsets. And that's it, for the immediate grounds.

"We have people who show up and ask, 'Where's the swimming pool? Where are the tennis courts? What's there to do here?" manager Ana Stevens says. "I mean, what are they expecting?" No kidding. The lodge literature and web site emphasize birds, birds, birds, as well as mammals, butterflies, and botanizing. Within an hour's drive or less, visitors can find a Panama Canal tour, a zoo, a golf course, or Panama City's shopping and nightlife. But as the lodge advertises, it wasn't built as a luxury hotel. It was a military post, and guests should expect a certain spartan quality.

MARIE READ

We visited Ammo Dump Ponds to see Rufescent Tiger-Herons and other water birds.

We wake to the roaring of howler monkeys, the *krick-krick* of Keel-billed Toucans, and the eerie whistles of Great and Little tinamous. Geoffroy's tamarin monkeys jump from tree to tree outside the windows, babies clinging to their backs. At lunch one day we look out to see a brown-throated three-toed sloth climbing a cecropia. Agoutis and coatis skitter through the forest just outside the gates.

Our second day we drive to famed Pipeline Road (see page 14), which winds 12 miles through the forest of Soberanía National Park. We've barely gotten started—and just seen a collared anteater (tamandua)—when the sky turns dark and a sudden burst of rain hits. Luckily, there's a small shelter nearby, where we wait for the 20 minutes or so that the shower lasts. That's the last we see of rain for the day.

Carlos is concentrating on antbirds, and thanks to his ears, CD player, and whistling ability we see several species, from the striking Ocellated Antbird (on my personal most-wanted list) to the tiny, stub-tailed Spotted Antbird. To our great delight, a Streak-chested Antpitta approaches to within a few feet. We get a scope view of a singing male Rosy Thrush-Tanager—one of the best examples I've ever seen of "the picture in the field guide doesn't do it justice." We finally get a look, too, at the bird that sounds most like a frog: Southern Bentbill, with its crooked schnoz and funny, snoring call.

We're wandering along a wooded section of the road when Carlos calls out, "Oh my God!" and starts setting up his scope. As one of us has already observed, "When Carlos says, 'Oh my God,' you better pay attention."

It's a male Blue Cotinga, hip-hopping around the top of a cecropia. "Look at that little beauty!" Carlos says—an expression he'll use quite a few times during the week. Several in the group immediately proclaim this their favorite bird so far. (At the end of the trip it will be in my top three, along with the antpitta and the Rosy Thrush-Tanager.)

As fabulous as Pipeline Road is, the best—or, at any rate, the most exciting for us—short burst of birding comes on the Plantation Trail, a streamside walk that begins where the Canopy Tower entrance road leaves the highway. It starts with a Great Tinamou scuttling along the forest floor beside the trail. After a small flock of the usual antbird and tanager suspects, we barely have time to admire a pair of Rufous Motmots before we spot a flock of Black-chested Jays, along with several Purple-throated Fruitcrows, Chestnut-headed Oropendolas, and three spectacular Crimson-crested Woodpeckers. Even though everyone is trying to stay quiet, these are occasions of much pointing and exclaiming, not to mention the odd expletive and wail. After this, chromatically challenged fellows like Dusky Antbird and Olivaceous Flatbill find it hard to compete.

Because Carlos and the other guides at Canopy Tower continually bird the surrounding hot spots, they always have a few goodies staked out. On Old Gamboa Road, we walk to within 25 feet of a resting Common Potoo—so close that its head fills the zoomed-in scope view. Not far away, we get great looks at both adult and immature Spectacled Owls and an astoundingly tame American Pygmy Kingfisher. And then there are the lucky breaks, including a Great Black-Hawk walking across the lawn at Summit Gardens like a chicken.

The gaudy Crimson-backed Tanager looks like "Elvis on velvet."

MARIE READ

Raul Arias de Para, the businessman, economist, conservationist, and former government official who operates the Canopy Tower, is building a more upscale ecolodge near his home in the resort town of El Valle de Anton, in the mountains west of the Canal Zone. (To be more geologically accurate, El Valle sits in the world's second-largest extinct volcanic crater.) At dawn one day we board a small air-conditioned bus and make the two-hour trip to the area. In and around Gaital National Monument we find birds more associated with the foothills than with the Canal Zone: Barred Hawk, "Blue-throated" (Emerald) Toucanet, Spotted Woodcreeper, Silver-throated and Bay-headed tanagers, Chestnut-capped Brush-Finch, and a handful of hummers. (A Violet-crowned Woodnymph, glittering as though it were cloaked in neon, immediately jumps to the top of several people's favorite-of-trip lists.)

As the week winds down, we look back on highlights including a night drive where Carlos spotlighted not only a sleeping Capped Heron and a Black-and-white Owl, but southern opossum, Central American woolly opossum, Rothschild's porcupine, Hoffman's two-toed sloth, and greater fishing bat. We also look back on only two or three times when we were caught briefly on a trail by rain, and exactly zero times when the weather significantly affected birding. So much, then, for my worries about the "green" season.

Comparisons are odious, but inevitable. I can say that I've never been to a lodge where the staff was more helpful and responsive than at Canopy Tower, and that Panama birding met our expectations and hopes—and then some. At the airport, waiting for our flight home, we were already talking about a return trip, maybe to the mountains and forests farther east. We were talking . . .

"What's that?" the ever-vigilant one asks. Two Crested Caracaras, flying over the runway. One last bird for the list, and *hasta la vista*, Panama. ■

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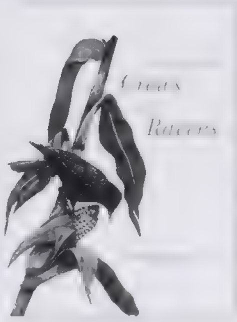

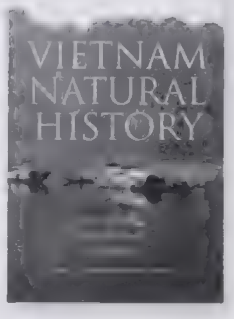

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A BIRDER'S GUIDE TO THE PIPELINE

MARIE READ

A birding paradise, Pipeline Road is set in the dense equatorial forest of Soberanía National Park (right). A Red-capped Manakin (above) is one of the local stars.

By Noah K. Strycker and W. Douglas Robinson

Panama's famed Pipeline Road is the hottest birding spot in Central America

If you ever see a swarm of 200,000 army ants marching toward you deep in the Panamanian jungle, you have only one option: don't move. The ants will march over your shoes, taking you for a tree trunk, and keep streaming past. But never mind the ants. You won't believe the eye-popping sights of the amazing tropical birds traveling with the swarm. Hoping to snatch fleeing insects, Bicolored Antbirds flit from branch to branch just above the leading edge of the marching ants, Spotted Antbirds lurk in the shadows, Ocellated Antbirds dart about, and woodcreepers, manakins, and gnatwrens join the frenzy. So intent are they on the feast, the birds hardly notice they are being observed. What a rush!

An ant swarm offers the ultimate tropical birding experience (see "Dedicated Followers" by Peter Wrege, Spring 2005). Yet this is only one of many treats in store for birders on Pipeline Road in central Panama. The Camino

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del Oleoducto has a reputation for being one of the best all-around birding spots in the world. Birds abound in the lush, moist forest. And not just any birds. These are the birds of your dreams: Golden-collared Manakin, Agami Heron, Nightingale Wren, Golden-crowned Spadebill, Rufous Motmot, White Hawk, Great Potoo.

Pipeline Road is a birding paradise. Set in the lowland Soberanía National Park, the dense equatorial forest is easily accessible and well stocked with palm trees, exotic-looking flowers, swinging monkeys, exquisite butterflies, and birds of every size and shape. The narrow dirt road winds over hills, across several streams and rivers, and along straight flat stretches until it peters out after about 11 miles. The farther you go into the deep forest, the better the birding gets. Wintering Neotropical migrants are more plentiful in second-growth forest at the beginning of the road; rarer species, such as curassows and guans, are more likely to be found in the denser reaches near the end of the road. All along the road, the landscape and sound effects are reminiscent of an amusement park jungle ride. Friendly toucans like the ones on cereal boxes perch amid tangles of oversized plants, and monkey howls mingle with birdsong over the droning cicadas. In this shaded, unrestrained landscape, fascinating birds can literally fall out of the sky. A birder working at a mist-netting station on the far end of the road once was startled when the lower mandible of a Bright-rumped Attila dropped into his lap. He looked up to see a Tiny Hawk on a branch high overhead, devouring the bird.

Manakins, such as the Golden-collared Manakin (above), are small colorful birds that perform elaborate displays in their courting areas called leks. Some leks can be found right beside the road in this area. The Bicolored Antbird (right) is one of the species that follows swarms of ants, trying to catch the fleeing insects. The bird's distinctive call can alert you to the presence of ant swarms.

MARIE READ (2)

ORNITHOLOGICAL STUDIES ALONG PIPELINE ROAD

With a long history of groundbreaking scientific bird studies, Pipeline Road and Soberanía National Park contain some of the best-known Neotropical bird communities in the world. Major research efforts began in the late 1960s with the establishment of a mist-netting operation near the Limbo Hunt Club, formerly a weekend hunting spot for military personnel. The area became the main site for identifying, aging, and sexing birds captured in nets in the surrounding forest. Birds have been marked and released twice annually here nearly every year for the past 30 years, generating estimates of the life spans and annual survival rates for more than 50 species.

The long-term netting effort has spurred additional studies in the vicinity, including the creation of a 100-hectare gridded survey area, named the Limbo Plot, where the locations of all birds have been mapped to estimate their abundances. Laid out in 1994, the plot has been surveyed intensively nearly every year since. More than 275 species have been detected on the plot, including about 180 residents. Surveys also allow measurements of annual variation in population sizes.

The Limbo Plot helped scientists navigate the dense tropical vegetation, which led to numerous projects and several detailed studies of the life histories of birds. For example, in recent studies of Song Wrens, Spotted Antbirds, and Western Slaty Antshrikes, researchers found that each of these species lays two eggs, but they have little else in common. Song Wrens are highly social, forage in small family groups, build domelike nests in ant-defended acacia trees, and give the misleading impression that they breed cooperatively. Spotted Antbirds build an open-cup nest about 1 meter above the ground, forage for insects by pouncing on the ground from a nearby perch, and often follow swarm-raiding army ants, occasionally pursuing the ants outside their large territories. Western Slaty Antshrikes build nests like Spotted Antbirds but place them higher, up to 12 meters above ground, and have the smallest territories (less than 1 hectare) of any bird on the Limbo Plot. The latter two species lose three out of four nests to predators whereas Song Wrens lose 50 percent or fewer.

Of all the research projects undertaken on the Limbo Plot, perhaps most impressive are the community-wide studies of bird nesting success. Each year since 1994, field researchers have combed the vegetation for songbird nests to document nest productivity and predation. Basic life-history characteristics, such as incubation and nestling periods, have been recorded for the first time for many of the species. To date, nearly 4,000 nests have been observed, making this the single largest study of tropical bird reproductive ecology.

Studies of birds along Pipeline Road have not been limited to the Limbo Plot. Extensive survey work has taken place all along the road, documenting the distribution of species throughout Soberanía National Park and solidifying the importance of the park for preserving bird diversity. Several bird species are not found anywhere else in the Panama Canal area. A few curassows and guans, which are heavily hunted in Panama, still remain in Soberanía, and a program for reintroducing endangered Harpy Eagles has been implemented in the area.

The specialty birds of Pipeline Road, such as the Rufous-vented Ground-Cuckoo, are the species of deep, untouched tropical rainforest. Large game birds such as the Crested Guan and Great Curassow can still be found here occasionally, though poachers continue to persecute them. A variety of parrots, such as Blue-headed, Brown-hooded, Mealy, and Red-lored, are common along the road. Black-and-white King Vultures soar lazily overhead like hang gliders. The forest echoes with the sounds of Rufous Motmot, Short-billed Pigeon, and Green Shrike-Vireo. One good bird often leads to another. Once, while chasing a pair of Ruddy Quail-Doves in the dense vegetation, we found ourselves face-to-face with a Streak-chested Antpitta.

Pipeline Road was built to accompany an oil pipeline running across the width of Panama during World War II, in case the Panama Canal became obstructed. The pipeline was never used but the road has been maintained, more or less, through the intervening years. These days, it provides unrivaled access to pristine lowland rainforest.

The combination of accessibility and remote-

PLANNING YOUR TRIP TO PIPELINE ROAD

The United States maintained an official presence in the Panama Canal Zone until 1999, which makes Panama one of the easiest foreign countries for Americans to visit. Metropolitan Panamanians typically speak at least some English, and the official currency is the U.S. dollar.

International travelers usually enter the country at Tocumen International Airport, a clean, friendly, and efficient facility about 30 minutes by car from Panama City. Most major rental car companies are present at the airport, and prices are comparable with those in large U.S. cities. You can drive in Panama with a U.S. driver's license for your first 30 days. Major roads are in good condition, but be forewarned: Pipeline Road can be in poor shape, particularly between May and December when rains turn the road into a rutted, muddy mess. Even four-wheel-drive vehicles can have difficulty getting through then.

NOAH K. STRYCKER (2)

Visitors to the town of Gamboa, gateway to the Pipeline Road, have spectacular views of the Panama Canal (above). The road was built during World War II to accompany a pipeline running across the width of the country to transport oil in case the canal became obstructed or damaged. A short walk from downtown Gamboa, the entrance sign to the Pipeline Road (right) says it all: "Observacion de Aves."

To get around Panama City and on to Gamboa, we usually ride buses and taxis, which are safe, carefree, relatively inexpensive, and convenient. Public transportation also affords a fun opportunity to visit with Panamanians. Panama City taxis cost less than $5 to go anywhere in the city limits. Buses run between Panama City and Gamboa about once an hour throughout the day for about 80 cents each way. To take a bus to Gamboa, catch a taxi from the airport to the bus station in Balboa on the other side of the city and wait there for the next bus. A one-way taxi ride from the airport to Gamboa will run $20 to $30 depending on the driver (as with all taxis, agree on the price up front).

OBSERVACION DE AVES.

Several comfortable accommodations are available in the Pipeline Road area. The Canopy Tower Ecolodge and Nature Observatory, converted from a former U.S. armed forces radar tower <www.canopytower.com> just outside of Gamboa, is close by and offers the advantage of guided tours and birds at your window (see page 8). The Gamboa Rainforest Resort, a sprawling complex within Gamboa facing the Chagres River <www.gamboaresort.com>, is closer to Pipeline Road and also markets ecological tours. Panama City offers many reasonably priced hotels and is close enough for daily commutes by bus, taxi, or rented car.

Pipeline Road bird tours may be booked through Panama City-based Ecocircuitos Panama <www.ecocircuitos.com> and through U.S.-based international birding tour companies, including Victor Emanuel Nature Tours <www.ventbird.com> and Field Guides <www.fieldguides.com>.

When you go, pack plenty of sunscreen, insect repellant, tropical-weight long pants, tropical-weight long-sleeved shirts, and sturdy, waterproof shoes or boots (preferably high-topped). In the rainy season, throw in a small folding umbrella, too. If you bring a camera, consider storing your equipment in sealed plastic bags with desiccant packets to deter lens-etching fungal growth.

Doing a little Internet research before your visit will alert you to hot spots, recent bird sightings, and the birding experiences of others (keywords = Pipeline Road Panama birding). You'll want a good North American field guide (such as *The Sibley Guide to Birds* or the *National Geographic Field Guide to the Birds of North America*) for migrants wintering in or passing through Panama. We highly recommend *A Guide to the Birds of Panama* by Robert S. Ridgely and John A. Gwynne, Jr., which contains a helpful Panama bird-finding guide after the species accounts.

ness makes Pipeline Road an unbeatable birding spot. It takes less than an hour to drive from crowded Panama City, with its 450,000 inhabitants, to the sleepy, half-abandoned town of Gamboa, gateway to Pipeline Road. In the 1930s, the wide streets, prim lawns, and charming two-story wooden houses of Gamboa buzzed with thousands of canal workers. Situated on the east bank of the Panama Canal north of the Chagres River—the 50-mile canal's principle water source—Gamboa today serves mainly as the headquarters of the Panama Canal's Dredging Division and as a center for laboratories and accommodations for the Smithsonian Tropical Research Institute. The institute draws an international mix of scientists for lowland tropical rainforest projects involving birds, mammals, soils, insects, fish, plants, and plenty in between. Despite its changing fortunes, Gamboa retains two outstanding attractions: knockout views of the Panama Canal (one of the greatest engineering feats of all time) and tropical birding at its finest. Just a short walk from downtown Gamboa awaits the simple entrance gate to Pipeline Road, its wooden sign foretelling the riches beyond: Observacion de Aves.

Pipeline Road shoots like a curvy arrow into Soberanía National Park, created in 1980 to protect lowland rainforest lying in a vertical strip along the eastern edge of the Panama Canal. The park is home to more than 525 species of birds. Where birds are scarce, sloths, howler monkeys, agoutis, caimans, jaguars, anteaters, iguanas, salamanders, toads, snakes, bats, mosquitoes, cicadas, ticks, ants, and chiggers provide an entertaining sideshow. Not to mention the butterflies. Regulars include the instantly recognizable morpho butterfly, with its splendid iridescent blue wings, and the giant owl butterfly, so named for its large eye spots on the wings to scare potential predators. Here, nature's drama unfolds against a backdrop of royal palms, impressive cotton trees, flashy lianas, and extravagant orchids.

Birders of all ages and levels of experience can catch the magic of Pipeline Road. Even the common birds, such as the splashy trogons and gurgling oropendolas, delight and inspire. More adventurous birders may be rewarded with views of Black Hawk-Eagles, Black-cheeked Woodpeckers, Black-breasted Puffbirds, Blue Cotingas, Masked Tityras, and Shining Honeycreepers. Compulsive listers will stalk specialties such as Wing-banded Antbird and Sulphur-rumped Tanager. If you're in the market for birds, birds, and more birds, Pipeline Road is the place for one-stop shopping.

The preferred method of birding Pipeline

TOM VEZO

The Pipeline Road cuts through Soberanía National Park, which boasts 525 species of birds, including the spectacular Blue-crowned Motmot (above).

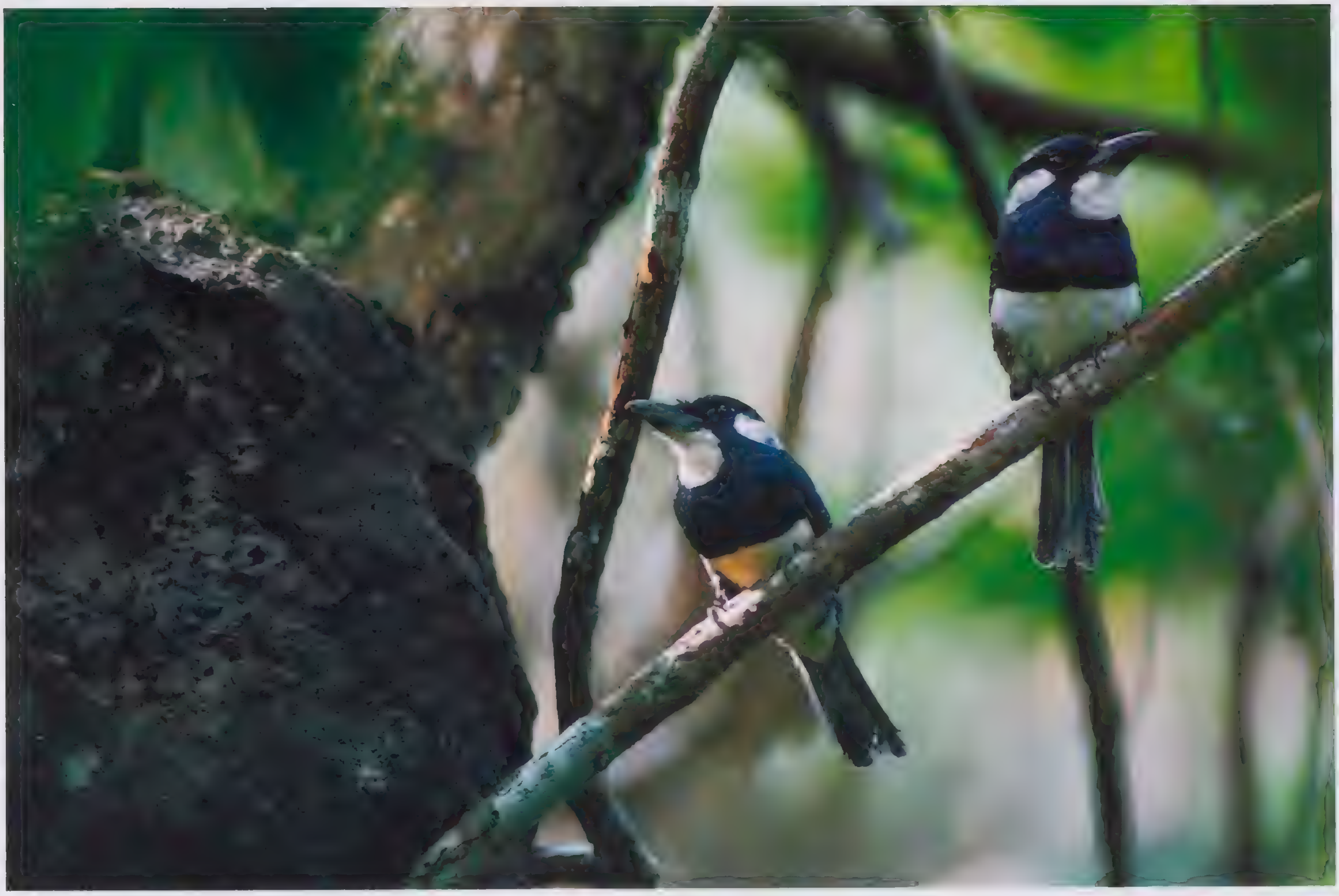
MARIE READ

The authors often woke to the krick-krick *sounds of Keel-billed Toucans calling from the trees around the lodge.*

Road is to walk slowly, alert for birds, investigating whatever turns up. In this lush tropical environment, knowing bird sounds as well as visual identification characteristics helps immeasurably, because spotting a bird foraging in the canopy is often difficult. At the very least, it's a good idea to learn the distinctive calls of the Bicolored Antbird, which often indicate the presence of an army ant swarm. Most bird activity ebbs by 11:00 A.M. In the heat of the afternoon, walking along one of the streams that cross the road can yield several species found only in this habitat. And some of them, such as the American Pygmy Kingfisher and Agami Heron, tend to stay active longer in this cool, shady environment.

Although driving the road can be a dicey proposition, many people do it. To get past the entrance gate, you need a key, which is sometimes available from the Panama Audubon Society <www.panamaaudubon.org> or the Smithsonian Tropical Research Institute <www.stri.org>. Driving can be especially challenging during the "green" (rainy) season when the road turns to sludge and four-wheel-drive vehicles regularly get stuck. One year, after a certain British birding group became hopelessly mired in a particularly nasty mudhole, the spot became famous as the "Brit pit." Wooden bridges along Pipeline Road—not overly dependable at the best of times—have been known to wash out in heavy rains. Trees often blow onto the road. Because the area is infrequently traveled, roadside assistance is virtually nonexistent. We know of at least one tourist who locked himself out of his rented car miles away from civilization and wasted the better part of a day trying to get inside with a radio antenna, which he had sawed off with his Swiss army knife. A better alternative is to book an organized tour or hitch a ride with a scientist or other passersby, who are usually willing to give birders a lift. For those who prefer to drive themselves, we advise taking it slow and listening for bird calls with the windows down—a good way to find the swarms of army ants.

With more cooperative weather and wintering migrants joining the resident species, the dry season (December to March) is the time



MARIE READ

most birders flock to Pipeline Road. Because of greater breeding activity of birds, insects, and other animals, however, the rainy months can be satisfying, too, and reasonably comfortable with an umbrella and waterproof footwear.

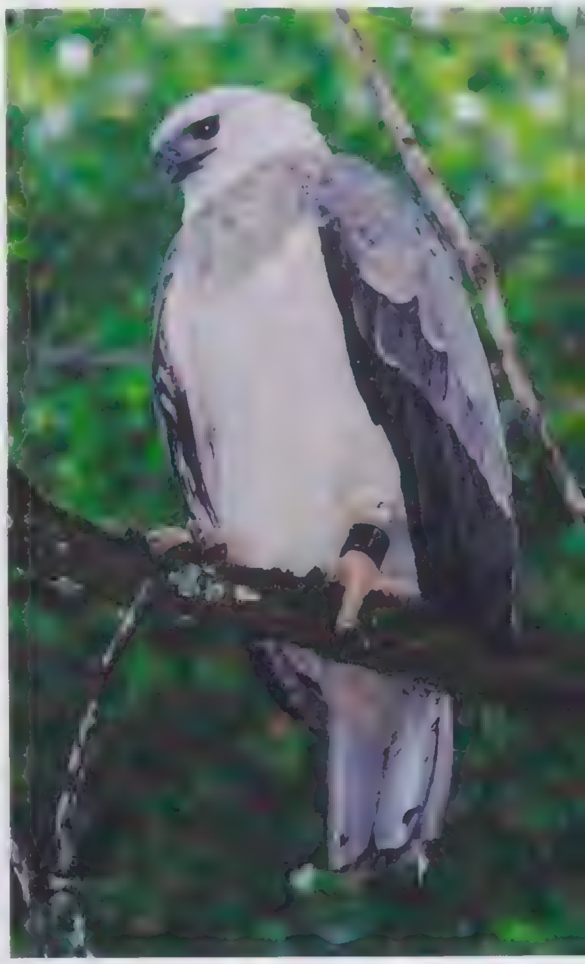
No visit to Pipeline Road would be complete without taking some short side trips to other local birding hot spots, including the Ammo Dump Ponds, Old Gamboa Road and Summit Gardens, Plantation Road and Semaphore Hill, Metropolitan Nature Park, and Achiote Road. These are all close by and provide chances to see species that are less common on Pipeline Road, such as Boat-billed Heron, Lance-tailed Manakin, Pale-eyed Pygmy-Tyrant, Yellow-green Tyrannulet, and White-headed Wren.

We have birded Pipeline Road many times and have never been disappointed. Noah Strycker's fondest memory came on an obscenely hot afternoon near the end of the road, after a long day of hiking. The birds were quiet; the forest was still. It was time to go back. Just as Noah turned the last corner and looked up, he froze. There, a few yards away on a tree branch overhead, perched a huge and extremely rare Harpy Eagle, the pride of Panama. From below, the eagle's feet looked as big as dinner plates on thick legs suspended from a powerful body. This formidable predator, capable of ripping apart a good-sized animal in its talons, sat with all the nonchalance of a barnyard rooster, staring down. It had a black band on one of its legs, identifying the bird with a Peregrine Fund project to reintroduce captive-raised young in the area. The Harpy Eagle is named after the Harpies of ancient Greek mythology, the terrible half-woman, half-bird creatures who seize dead souls. It seemed strange that, in the modern world, we humans should have the power to determine the fate of the now-endangered harpies. ■

Noah K. Strycker is a student at Oregon State University, studying fisheries and wildlife science and art. He has published articles about birds in regional and national birding magazines, many of them illustrated with his own photographs and drawings.

W. Douglas Robinson is an assistant professor in the Department of Fisheries and Wildlife at Oregon State University. He has studied bird communities in Panama since 1992. His dissertation research was done on the Limbo Plot along Pipeline Road in Soberanía National Park.

More adventurous birders may be rewarded with views of Black-breasted Puffbirds (above) and Harpy Eagles.



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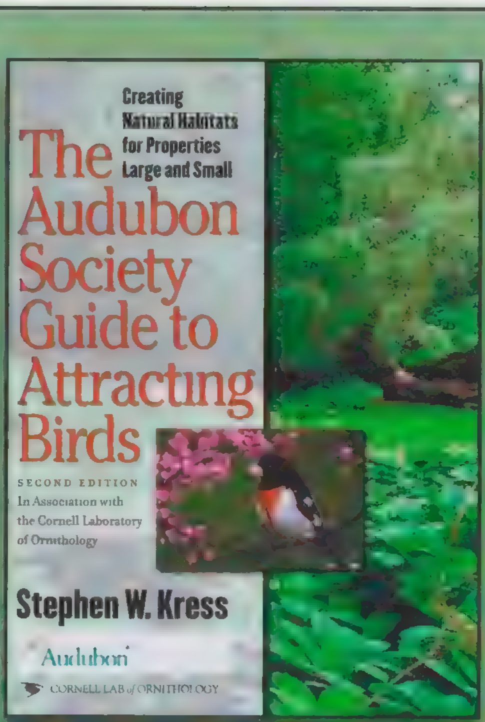

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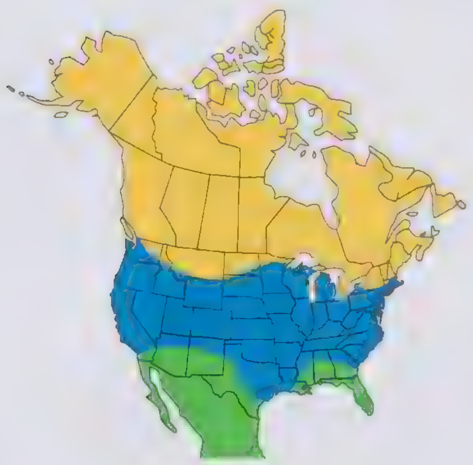

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Chasing Starlings, Chased by a Lion

BY DUSTIN R. RUBENSTEIN

A research adventure in the wilds of Kenya

When I was seven, I was almost eaten by a lion—not just any lion, but a member of a man-eating pride that had killed a person only the week before. I had been hiking in the highlands of Kenya, following a couple of hundred meters behind a student group my father was leading. The going was tough; the tussock grasses were almost as tall as me and as hard as I tried, I couldn't keep up with the rest of the group. Eventually, I decided to sit in a bamboo grove along the trail, waiting for them to descend. They finally did, but we headed down the mountain at an even quicker pace. It wasn't until later that

ARTHUR MORRIS/VIREO

Kenya is home to 26 starling species, including the Superb Starling (above), one of the species the author studies. At right, a male lion rips apart a recently killed zebra carcass.

DUSTIN R. RUBENSTEIN

BHL

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DUSTIN R. RUBENSTEIN (2)

A cheetah (above) peers out at the researchers from the cover of tall grass. Although they are endangered throughout most of Africa, cheetahs are a relatively common large feline in this part of Kenya.

evening that I was told that upon reaching the top of the mountain, the group had been warned that the man-eating lions were resting in the shade of the bamboo along the path—in the same bamboo grove where I had rested.

A story like that doesn't quite register to a seven-year-old. Since that time, however, I have had numerous run-ins with buffalos, elephants, and other large game while hiking in Africa. Experiences like these make you realize why Africa is unlike any other place on earth; megafauna abound, and you have to be alert when they are around, which is one reason tourists in most of Africa are not allowed to leave their vehicles. So when Irby Lovette, director of the Evolutionary Biology program at the Cornell Lab of Ornithology and my companion on this trip, asked if we could walk over to a dead buffalo—not 200 meters from our camp—and try to find the lions that had killed it the night before, I was a bit hesitant. I had somehow managed to sleep through the death chorus of 18 lions killing an old male cape buffalo just outside the camp the night before. I had seen a group of three buffalos as we came back to camp at dusk, and I had even fallen asleep to the sounds of them grazing outside our tents. The moaning buffalos and roaring lions had kept the rest of our group—four Kenyan assistants, two armed rangers, and Irby—up for half the night.

Despite the rangers, presence, and much to Irby's disappointment, we decided not to venture over to the carcass on foot. We had tried a similar stunt not two days earlier when we discovered another lion kill in a different part of Kenya. As we examined what was left of a young giraffe carcass after the hundreds of White-backed Vultures—which now sat in the nearby trees waiting impatiently for us to leave—had picked the two-day-old lion kill clean, I casually looked up to see two black rhinos galloping at full speed toward us. Black rhinos are extremely endangered and the only other one I had ever seen on foot was in Zimbabwe. That rhino had been so scared of our group that it had taken off before we could even get a good glimpse of it. As we watched these two rhinos get closer and closer, finally crossing a small valley and turning directly toward us, I realized that maybe these rhinos weren't as skittish. We jumped into the nearby Land Rover and started it up, hoping that the noise of the diesel engine would scare them away, which it did.

By the time the old bull buffalo had been killed, we had been in Kenya for a week. Irby and I, along with our group from the National Museums of Kenya Ornithology Department and the Mpala Research Centre, were there to catch starlings to study their evolutionary relationships. As part of my Ph.D. dissertation research at Cornell on the evolution of cooperative breeding in African starlings, Irby and I had decided to build a molecular phylogeny (evolutionary tree) of the entire Sturnidae family (starlings and mynas) using DNA.

Although most people around the world are familiar with the common European Starling, the remaining 117 species in the family are Old World inhabitants. There are 48 species of African starlings and 69 species of Asian starlings and mynas. More than one third of the African species are cooperative breeders—a social system in which more than two individuals help to care for a brood of young. These cooperative breeders generally live in family groups, with offspring from previous years foregoing their own independent breeding opportunities to help raise their siblings.

I had been working in Kenya for the past four years on the Superb Starling, a bird as common in Kenya as the European Starling is in the United States. Because Kenya is home to 26 starling species, more than any other country in the world, we decided to focus our capturing efforts for the phylogeny project there. We had come for an intensive three-week trip that would ultimately cover more than 3,000 kilometers in search of four particularly elusive species: the Fischer's, the Bristle-crowned, the Magpie, and the Stuhlmann's starlings. Although specimens exist in many museum collections around the world, it had probably been decades since anyone had caught one of these species, and it is quite possible that no one had ever before handled a live one.

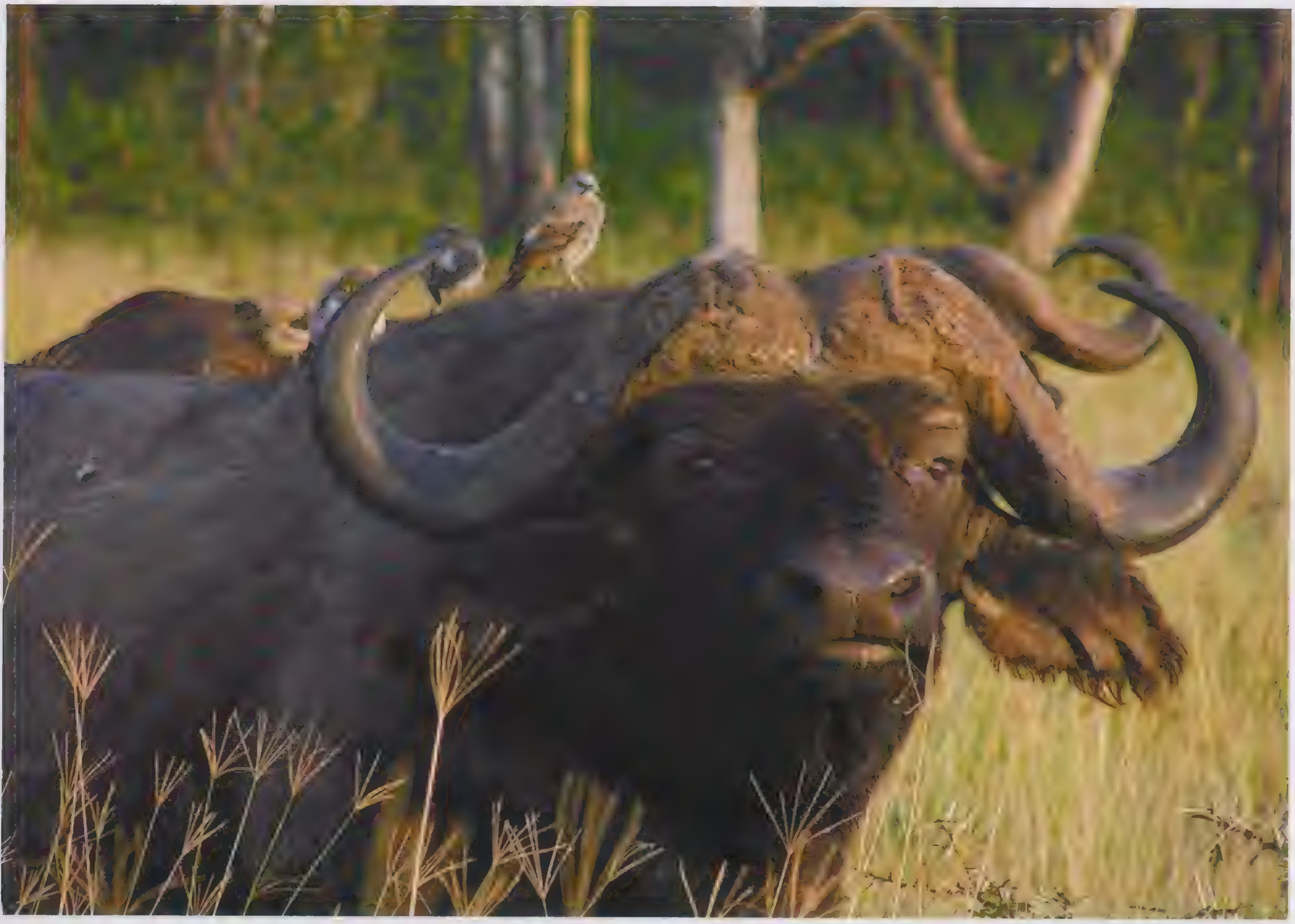
After spending some time in Nairobi teaching a class in conservation genetics for students from the National Museums of Kenya, we headed north to the Laikipia Plateau on the northwest slopes of Mount Kenya. We made a brief exploratory stop at the vast Lewa Wildlife Conservancy—where the rhinos chased us away from the giraffe kill. When we found out that the dry-habitat species we sought at Lewa were seasonal migrants and not present at this time of year, we headed farther north to the Shaba Game Reserve. It was here that we planned to spend the majority of our Kenya trip focusing our efforts on the Fischer's, Bristle-crowned, and Magpie starlings.

Although Kenya is one of the least dangerous countries in Africa, only the bottom third of the country is safe for tourists. Shaba lies on the northern edge of this safe zone. Due north of Shaba, barren desert stretches a few thousand kilometers into Sudan, Ethiopia, and Somalia. Bandits armed with AK-47s roam the area, routinely crossing the unmarked national borders to steal cattle, rob vehicles, and generally cause trouble. We were never quite sure whether our mandatory armed rangers in Shaba were there to protect us from wildlife or from humans.

After watching the lions gorge themselves on the old bull from the safety of the roof of our Land Rover, our team split into two groups: one to focus on the Fischer's Starling, the other on the Bristle-crowned Starling. The day before, we had seen a large mixed-species flock of Superb, Fischer's, and Golden-breasted starlings foraging in the savanna about 10 kilometers from our camp, as well as a second flock of Superb, Magpie, and Bristle-crowned starlings coming to drink at a stream just outside the reserve gate. After dropping one group off in the bush with one of the rangers, Irby and I

The endangered black rhino (above) is making a comeback on many private conservancies throughout Kenya. The rhinos the researchers encountered on their trip seemed less afraid of humans than those in other parts of Africa the author had visited. One day, two rhinos came galloping toward the researchers as they were examining a lion kill, and they had to flee to their nearby Land Rover.

DUSTIN R. RUBENSTEIN (2)



Above, a group of Wattled Starlings perches on the back of a cape buffalo.

staked out the spot where we had seen a large flock of Bristle-crowned Starlings the evening before. Unfortunately, we ran into some dramatic vehicle problems just outside camp. The Land Rover blew a universal joint 50 meters from the lion kill. We sat stranded with lions surrounding the vehicle. Although they were mostly resting idly in the shade, some would occasionally stroll to the carcass to continue feeding, often passing close to us. The Land Rover was as dead as the buffalo, and there was simply no way to leave on foot. Even our heavily armed ranger would not step out of the vehicle with a pride of lions so close. After several hours, a passing park guard happened to spot us and drove over to see why we were stopped. With his help, we risked a quick trip out to attach a cable to our Land Rover, and he towed us to a safer spot where we could install a spare universal.

After finally being dropped off at the reserve gate, we spent the rest of the day waiting for starlings with Wilson Nderitu Watetu, my friend and assistant who had helped me with my dissertation research for the previous four years. The only starlings we saw for most of the day were Superb Starlings. These iridescent birds have one of the most complex social systems of any bird species, living in large, stable groups of up to 30 or more birds. Within each group, as many as six breeding pairs build individual nests in acacia trees on a group-defended territory that they maintain year-round. Nonbreeding group members help to raise the offspring of the breeding pairs by bringing food to nestlings and mobbing predators. Although the majority of these male and female helpers are offspring from previous years that assist mostly at their parents' nest, they sometimes help at more than one nest, and even breeders occasionally help at nests that are not their own.

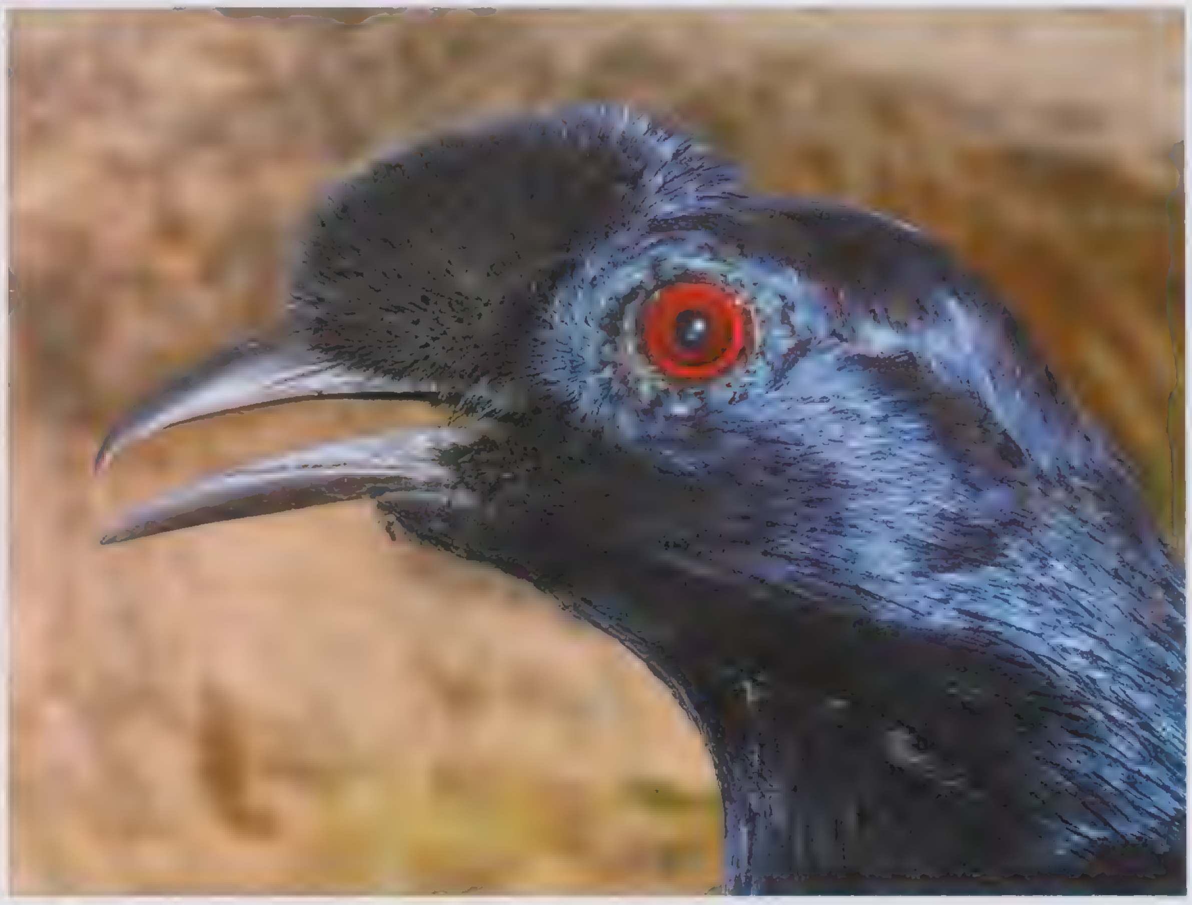
Although the Superb Starlings came and went for most of the day, they didn't go down to the papaya we had put out as bait, and they rarely stayed long. They were continually disturbed by the herds of camels, cows, and goats that were brought to drink at the water hole frequented by the Bristle-crowned Starlings. The herders were used to seeing tourists daily, but they couldn't seem to understand why a Kenyan and two Mazungus (or white men) were sitting under a tree by the river watching piles of rotting papaya slowly melt in the sun. The young boys who herded the goats were afraid to stop and talk with us, but one group of elderly cow herders came over to see what we were doing. Wilson translated their Swahili for us, and after they learned what we were doing, they couldn't seem to understand why we would want to waste perfectly edible papaya to catch birds. After we declined to give them some of our rotten and moldy fruit, they became angry and argued back and forth in their tribal language, Turkana. Little did they know, but Wilson also spoke Turkana. Although he didn't let on that he knew what they were saying, he later told us that they were arguing about what to do about our refusal and what to do with us. Luckily, they eventually strode away—we were starting to run low on the papaya bait and even if our Land Rover had been reliable, the nearest place to buy papaya was more than two hours away.

Soon after the herders left, the Superb Starlings returned. This time, however, they came with a pair of Magpie Starlings. Striking birds with contrasting black-and-white feathers and glowing red eyes, the Magpie Starlings never came to the ground or approached the papaya. They spent all of their time in the tops of trees, seeming to mock our primitive methods of trapping. Anecdotal reports suggest that Magpie Starlings are also cooperative breeders, but we were never able to confirm this because we only saw two pairs during our week at Shaba.

Not long after the Magpie Starlings arrived, a group of more than 50 Bristle-crowned Starlings returned to drink in the late afternoon. Their calls were musical and high-pitched, and we could hear them from a long distance as they made their way down and around a nearby mountain in small groups. Almost immediately upon arrival, they discovered the papaya and flocked to the rotting fruit. I learned early in my Ph.D. work that starlings are generally too intelligent to be captured reliably in mist nets. Although nets do work around nests during the breeding season, during the rest of the year, starlings evade them easily. After spending a year playing with various traps, I resorted to a basic design suggested by Wilson and my other field assistants that mimicked the handmade traps they built as kids to catch doves. We ended up making a number of wire traps shaped like an oil drum cut in half with a small door wired to the side for removing trapped birds. We would prop the traps up with sticks attached to 100 meter rolls of twine, and then hide behind bushes and hope for the best. When the birds approached the bait—papaya seemed to work best—we would pull the string, trap the bird, and then quickly remove it through the small door. Using this simple method, I have caught hundreds of Superb Starlings over the years. Although the Magpie Starlings were not fooled by our bait, this method now looked as though it might work on the Bristle-crowned Starlings.

As sunset approached, our Land Rover was still undergoing repairs, and we faced the prospect of having to walk back to camp past the lions. Fortunately, we managed to hitch a ride with a tourist vehicle returning from a neighboring reserve in exchange for showing them the kill. The next morning, we realized we wouldn't be so lucky and would have to hike to retrieve our Land Rover. Although the buffalo carcass had nearly been picked clean by this time, we could still hear the loud roars of the lions. Despite their nearby rumblings, and much to Irby's pleasure, we took one of the armed rangers and set off on foot. We had our first sighting of a pair of Secretary-birds and found an old elephant skeleton, but we managed to avoid running into the lions.

By midmorning, the Land Rover was mobile, the traps were set and baited, and we again hid in a ravine waiting for the flock of Bristle-crowned Starlings to arrive. In the late afternoon, small groups began appearing from around the nearby mountain, as they had the day before. They went to drink and again found our papaya. It wasn't long before we had caught five birds in the traps; the first of our target species was in hand. Being able to hold these odd creatures and view them up-close made us appreciate them all the more. Atop



The Bristle-crowned Starling (above) has a distinctive crown of bristly feathers on its large forehead. Although some Asian starlings have similar ornamental crests, this is the only African starling with this type of crown. Its function remains a mystery.

their large foreheads was a projecting crown of bristly feathers. We don't know what purpose this crown serves; both males and females have the bristle-crown, and this is the only species of African starling with such a structure. A few mynas from southeast Asia have similarly placed crests, but the bristle-crown of this species is certainly unique. Our subsequent DNA studies have shown that the mynas and Bristle-crowned Starlings evolved their crests independently.

The beautiful Lilac-breasted Roller (above) is a common resident in the savannas of East Africa.

DUSTIN R. RUBENSTEIN

After drawing blood, attaching metal leg rings, and taking some photographs, we triumphantly lugged our gear to the reserve gate and awaited our newly repaired Land Rover. Despite the vehicle and animal mishaps, this adventure was finally turning into a success.

Although we stalked the Magpie Starlings for several more days and even searched the entire reserve and other neighboring reserves for larger flocks, the birds never approached the ground, staying too high for the mist nets we had set up. Our focus shifted to the flock of Fischer's Starlings that our other group had been trailing for days. Although we were repeatedly able to locate the mixed species flock we had seen on the first day, the birds roamed over an area of many square kilometers and they never approached our papaya baits. Because they occasionally used the same trees to perch, we set up some mist nets and crossed our fingers. With a bit of our new-found luck, we managed to capture a single Fischer's Starling in one of the nets. Our second target species—a cooperatively breeding one at that—was in hand and our trip to Shaba was a success. These two species of starlings were both strikingly different from any of the starlings I had captured before, and they would be of great use for our phylogeny.

After three days, all that remained of the old bull buffalo were skin and bones, and not much of either. Surprisingly, this kill was never visited by scavenging hyenas or vultures, which attend most carcasses in the African savanna. This had been a truly ravenous pride of lions; they ate everything and kept the scavengers away. In hindsight, even Irby agreed that it was probably a good idea we used the vehicle that first morning instead of venturing in on foot. After the lions finally departed we decided that perhaps it was time for us to leave as well. We had caught two of our three target species, and it didn't look like we would have much luck with the Magpie Starling.

We headed south, making stops at several of the Rift Valley lakes to capture additional species of starlings and pick up a new set of ornithologists from Nairobi. We closed our trip in the few remnant rainforest patches on the Kenya-Uganda border, home of the rare Stuhlmann's Starling. Except for a frighteningly close encounter with a black mamba snake, the rest of the trip was free from dangerous animal encounters. Overall, we managed to locate 16 species of starlings, the last being the Slender-billed Starling, which we found in the center of Nairobi on our final day. We had observed more than half of the starling species in Kenya and managed to capture half of those.

As Irby and I prepare to take a group of Cornell undergraduates back to Kenya for a three-week field course, I wonder how we can top this trip. I just hope that outdoing this past research expedition doesn't mean stumbling onto more lions or rhinos while on foot. ■

Dustin Rubenstein is a Ph.D. candidate in the Department of Neurobiology and Behavior and a lecturer in the Department of Ecology and Evolutionary Biology at Cornell University. His dissertation research examines the evolution of cooperative breeding in African starlings, and much of his molecular work is done in the Cornell Lab of Ornithology's Fuller Evolutionary Biology Laboratory.

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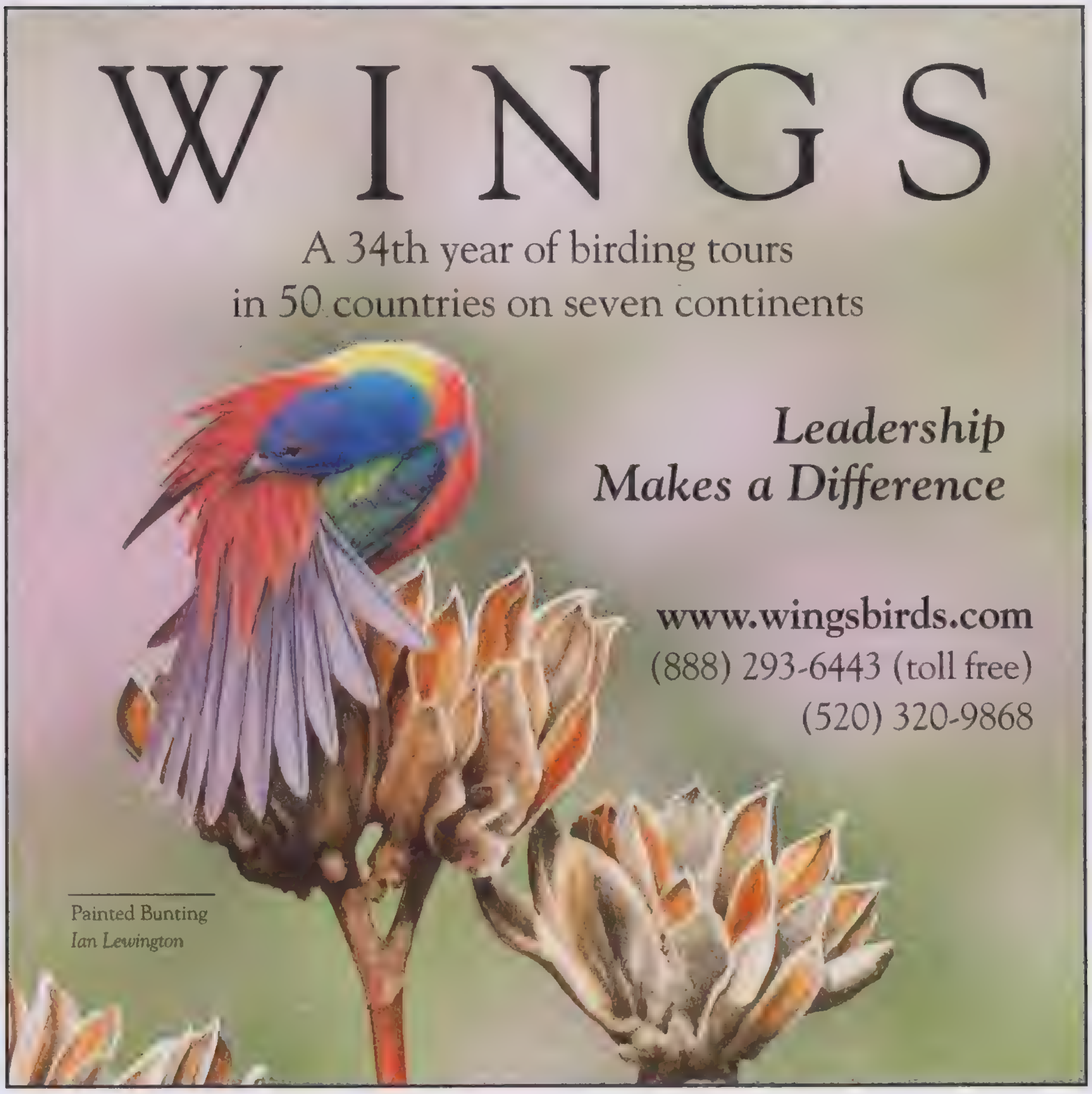

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The Thrush Chasers

BY MIYOKO CHU

Tracking migratory songbirds with radio-telemetry

On May 24, 1965, Richard Graber was waiting for thrushes in an orchard in Urbana, Illinois. At 7:00 that morning, he had strewn six mist nets among the shrubs. Already he had caught a Canada Warbler, a Red-eyed Vireo, a Wilson's Warbler, and an Ovenbird, but they were too small for his purposes and he had let them all go. It wasn't until noon that he finally caught what he was waiting for—a Gray-cheeked Thrush, a bird heavy and strong enough to carry a miniature radio transmitter on its back while it flew. If his plan worked, he would ascend with the thrush by airplane that night and follow the bird wherever it migrated by listening for the pulse of the transmitter.

An ornithologist with the Illinois Natural History Survey, Graber had studied bird migration using radar images. He had made recordings and quantified the birds' calls as they passed overhead. But clues such as these didn't tell Graber what he really wanted to know. How did a bird decide when to take flight, where to go, how fast to fly? Migrating with the birds was the only way to find out.

As Graber gently untangled the Gray-cheeked Thrush from the mist net, he noticed faint spots on the grayish-brown wings, the marks of a young bird that had hatched the previous summer. In the first months of its life, the thrush had flown perhaps to Colombia or Venezuela for the winter; now it was on its way back north, having completed 7,000 miles of its 8,000-mile round trip. Graber held the softly feathered thrush in one hand and used his other hand to dab a spot of glue on the button-sized transmitter with its foot-long antenna. He pressed the transmitter onto the bird's back, then released the thrush into the trees.

Before dusk, Graber drove to the nearby Illini airport, where he waited nervously with pilot Jim Taylor. At 7:55, the thrush took off, its signal increasing in strength as it rose into the air. Minutes later, Graber and Taylor were airborne, listening to the thrush's signal through headphones. Taylor kept the airplane within a mile of the flying thrush as it headed northeast at about 50 miles per hour. "The experience was unique," Graber later wrote. "A thrush was guiding us to some unknown destination."

Mile after mile, Graber and Taylor followed the bird's signal in the darkness. Then, as they approached the south edge of Chicago, engine noise from the airplane drowned out the signal. Quickly, Graber marked a line on the air chart that showed which way the thrush was heading. He calculated that if the bird kept flying in the same direction at the same speed, it would cross north of Evanston, Illinois, at 10:37. Taylor headed the airplane toward Evanston, then circled just north of the town while they waited. At 10:37, they picked up the bird's signal, right on schedule. As they flew northward again in pursuit of the thrush, the scattered lights below suddenly dropped off into pitch-blackness. The bird was leading them out over Lake Michigan.

"My hopes sank," Graber wrote. "Unless it changed its course, it would fly virtually the length of Lake Michigan, almost 250 miles over the open water—this in addition to the 140 miles it flew before reaching the lake. Nearly 400 miles and more than eight hours of flying with no chance of rest."

The airplane's fuel was low—too low to make the flight that the bird would have to complete on just a few grams of fat. Reluctantly, Graber and Taylor swung back toward the mainland. "Where that lone, delicate bird went, we could not risk going," Graber wrote. "In that moment, as the signal faded in the darkness, I felt overwhelming admiration for that bird. . . . Thinking of the transmitter, I flinched. What right had I to add almost three grams of useless burden to the hardships this delicate creature faced? If only I could take it all back. Let the bird keep its secrets, only let it be safe. That was my fervent wish. Yet nothing could change what was already started."

Based on the bird's heading and speed, Graber calculated that the thrush should cross Sturgeon Bay, Wisconsin, around 2:40 A.M. They could try to intercept the bird there after refueling. Meanwhile, the thrush was flying directly into the path of a severe thunderstorm. Already the sky had clouded over and rain was pelting the airplane's windows. After Taylor landed the plane in Green Bay, Wisconsin, Graber stepped out of the airplane for a moment to look up at the sky. As cold raindrops fell on his face, he could hear the high-pitched calls of thrushes and warblers flying overhead. A few minutes later, he and Taylor were airborne once more, racing to find their Gray-cheeked Thrush among thousands of songbirds migrating northward.

When they reached Lake Michigan again, bolts of lightning were shooting down over the water. Graber thought about the solitary bird, warm and filled with life in the stormy sky. He imagined the rain-drenched thrush becoming too exhausted to fly and fluttering down into the dark water. Tense with anticipation, Graber and Taylor

Below, pilot Jim Taylor in the Piper Cherokee airplane used to track migrating thrushes in 1965, including the Gray-cheeked Thrush that he and Richard Graber followed for 400 miles on a stormy night.

W. D. ZEHR/COURTESY OF ILLINOIS NATURAL HISTORY SURVEY

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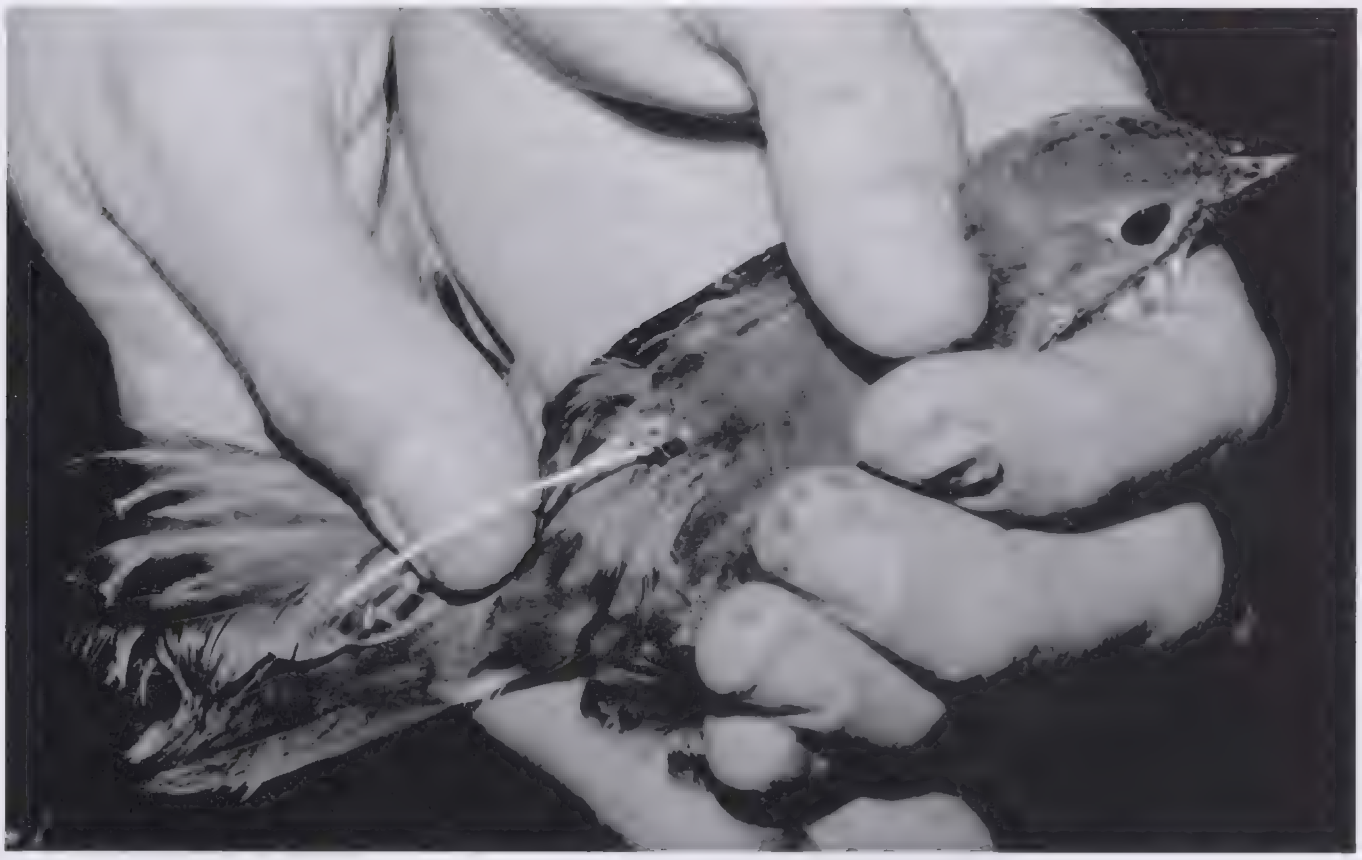
approached Sturgeon Bay around 2:30 A.M., within five miles of where Graber calculated that the thrush would pass by. If their timing was right and the bird was within 25 miles, they should hear the signal. They circled the area, listening for the signal in between crashes of thunder. Ten minutes went by as they listened in vain. "There's no hope, Jim," Graber finally said. "Let's go back." But Taylor kept circling. The minutes slowly ticked by until suddenly, at 2:48, they both heard the familiar beeping coming in over the headphones. Taylor circled again, then flew toward the signal until Graber was convinced—the bird was still flying on the same heading that it had ever since taking off from the orchard in Urbana.

"Neither of us actually spoke aloud, but there was a sigh of relief between us that said, 'Thank God! He made it,'" Graber wrote. Since their last contact with the thrush, four hours and nine minutes earlier, the bird had traveled 200 miles over the water and was still heading northward at about 50 miles per hour. If it kept going, it would reach Washington Island in 40 more minutes, around daybreak. Yet Graber and Taylor never found out whether the thrush landed safely. The storm and the dense fog forced them to turn back as the thrush flew on.



A radio-tagged thrush, showing the antenna protruding from the transmitter beneath the feathers. The beeping signal could be detected from a few miles away when the bird was on the ground, or from 25 miles away in flight.

W. D. ZEHR/COURTESY OF ILLINOIS NATURAL HISTORY SURVEY (2)

To Graber, the thrush's flight had seemed something of a miracle, as staggering to his imagination as an astronaut's flight to the moon. He would never forget how the creature he had held in his hands at midday had flown more than 8 hours that night, crossing 400 miles. In cloudy skies without stars or the moon to help show the way, it had kept an unerringly straight path. Before its long annual journey was ended, it would have to cross another 100 miles over Lake Superior then onward into Canada. Many unanswered questions remained, but Graber hadn't liked interfering with the thrush's fate—not when it had already survived the odds of crossing so many perilous miles. "Let the bird keep its secrets, only let it be safe," he had written, and it seems that he meant it; he never tracked another thrush again.

In the spring of 1966, Graber asked his friend and collaborator Bill Cochran to continue the project. An electrical engineer, Cochran had designed the transmitters carried by the thrushes and had become hooked on following the birds while helping Graber in the field.

Without the funds to track birds by airplane, Cochran decided to follow the thrushes by car and live out of his vehicle along the way to cut costs. He mounted an oversized antenna on top of his black Chevy 10 and cut a hole in the roof so that the antenna's pole could protrude into the passenger compartment. While the driver pursued the thrush, the backseat passenger could rotate the antenna, plot the bird's course on road maps, and help navigate the best routes.

From 1965 to 2004, Cochran tracked an assortment of birds across some 30,000 miles, requiring about 150,000 miles of actual ground travel to keep up with the signals and search for the birds after they landed. He followed Peregrine Falcons, Merlins, Golden Eagles, Tundra Swans, and Sandhill Cranes, but mostly he tracked thrushes—altogether about 100 Wood Thrushes, Swainson's Thrushes, Hermit Thrushes, Gray-cheeked Thrushes, and Veeries.

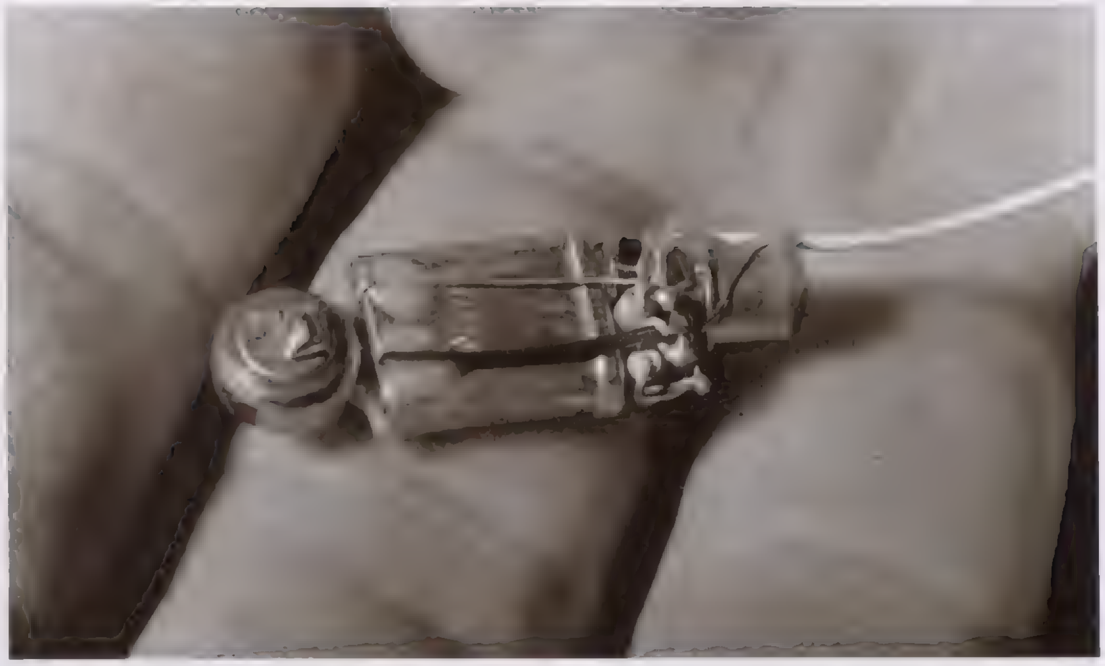
Of course, driving behind thrushes required a good deal of persistence as well as luck. The longest-distance chase was in 1973, when Cochran and his assistant, Chip Welling, followed a Swainson's Thrush for seven nights, nearly losing the bird three times along the way. In Iowa, the signal vanished when the thrush took a rare daytime excursion while Cochran and Welling were eating breakfast. In Minnesota, they lost the bird when they ran low on fuel and had to look for a gas station. Farther north in Minnesota, although they were driving below the speed limit, a police officer stopped their suspicious-looking vehicle, cited them for speeding, and ultimately caused them to lose the bird again.

They relocated the thrush each time and followed it until they reached the United States-Canada border in Lena, North Dakota, about four o'clock in the morning. They slowed their car, then came to a stop where a Styrofoam barrier blocked the traffic lane. The border station was dark, closed for the night. As they sat in the car, Cochran and Welling could hear the transmitter's signal as the bird flew onward in the dark. The minutes passed as the distance increased between them and the bird they had pursued so closely for the past seven nights. "It was excruciating, it was horrible," Cochran recalled. "It kept going through my mind—just push those Styrofoam things out of the way, and we could just drive on. There wasn't anybody there to stop us. I wish now that I had. Let them arrest me."

They crossed into Canada when the station opened later that morning, but within hours they were forced to stop on a rural road when the Chevy's radiator boiled over and ran dry. "We found a ditch that had water in it and we had some paper cups," Cochran said. "It took one heck of a long time to fill that radiator with trips down to the ditch." They never found the thrush again. "It was sad to leave," Cochran says. "For several nights thereafter, before falling asleep, I would hear the beeping sound. I'd been listening to it off and on for so many days that as I went to sleep I'd hear it even though it was no longer there."

Through the years, though, every excruciating loss was accompanied by hard-won information. For example, the studies revealed that the thrushes took off just after sunset, usually on days when the air temperature had risen to at least 69° F in the shade and wind speeds at takeoff were six miles per hour or less. They landed if their body weight dropped to the level of the previous morning or if they encountered a dip in temperature even as slight as 3 degrees; otherwise, they usually flew all night. By daylight, the thrushes seldom moved more than a few hundred yards from where they had landed. Thrushes weighing less than an ounce would stay at the stopover site until they had gained more fat; those weighing slightly more than an ounce would resume migration.

Cochran also documented how individual thrushes traveled along different headings, but each bird appeared to maintain its own constant heading throughout its journey. How did they stay on course? By studying captive birds, ornithologists had discovered that songbirds could use several kinds of clues for orientation—landmarks, stars, the position of the sun, patterns of polarized light, and even the earth's magnetic field. Yet little was known about how the birds used these cues in free flight. Cochran reasoned that the thrushes must use a magnetic compass, since they could stay on course even on cloudy nights. But they must also use some other cue; otherwise, they could become confused when crossing the magnetic equator or flying through anomalies in the earth's magnetic field.



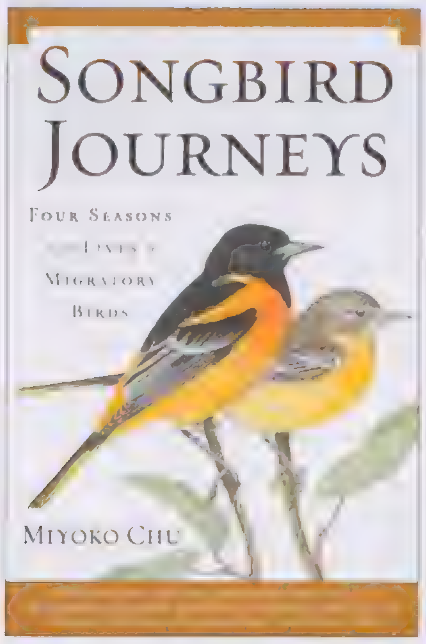
The radio transmitter (above) weighed less than one tenth of an ounce and included, from left to right, a battery, crystal, transistor, and antenna.

To test this idea, Cochran exposed thrushes to an altered magnetic field before takeoff. In 1978, 1979, and 1984, he captured eight thrushes, put them in cages during sunset, and shifted the magnetic field around them to the east. He managed to follow two of the birds for two flights in a row. He discovered that on the first night, the birds flew westward rather than flying north. On subsequent nights they migrated northward again. This meant that the birds were indeed using a magnetic compass—the altered field had caused them to orient in the wrong direction. Cochran concluded that they corrected their path on the next flight by using the position of the setting sun or the pattern of polarized light near sunset to calibrate the compass.

For decades, the results of most of Cochran's work remained unknown to the scientific community. "People knew that there was this weird ingenious person out there, sort of a gypsy driving behind a thrush," said Martin Wikelski, a biologist at Princeton University. "But they didn't really understand how far-reaching his ideas and techniques were."

In 1999, after Cochran had been tracking thrushes for 34 years, Wikelski, a young biologist then at the University of Illinois, had become excited about the possibility of measuring how much energy birds expended in migratory flight. Before releasing a thrush with a transmitter, he planned to inject it with doubly labeled water, a form of water with distinctive hydrogen and oxygen isotopes that is used to measure energy expenditure in humans and other animals. After following the thrushes by car using Cochran's techniques, he would recapture the thrushes and take blood samples to compare with the samples before take-off.

Wikelski and his collaborators recaptured 12 thrushes and measured their energy expenditure. The results were counterintuitive: on their spring journeys, thrushes spent less energy flying than they did while resting and refueling during stopovers. Feeding a large brood of young required more energy per day than the migratory flights that many had assumed were so costly. A thrush could complete a 3,000-mile trip from Panama to Canada in 18 flights over the course of 42 days, averaging about 158 miles, or 4.6 hours per flight, and expending about 0.0003 Calories per mile, including flights and stopovers.



SONGBIRD JOURNEYS

FOUR SEASONS IN THE LIVES OF MIGRATORY BIRDS

MIYOKO CHU

Cochran and Wikelski also began using radio transmitters that Cochran had designed to detect birds' heartbeats and wingbeats as they flew. For the first time they recorded how quickly a songbird's heart pumped as it flew through the sky—about 840 beats per minute. They simultaneously recorded the birds' wingbeats, finding that the thrushes beat their wings 570 to 780 times per minute—about 3.2 million wingbeats for its entire continental flight.

In 2005, Cochran and Wikelski published a summary of major findings from the past three decades of tracking thrushes, giving scientists a rich new source of information about songbird migration. "The seven nights that Bill followed a thrush to Canada is still the best information we have on migrating songbirds," Wikelski said. "There's nothing comparable out there. The problem is that to get this kind of data, you have to work like crazy."

In the future, a new generation of radio transmitters or satellite tracking from space could make challenges of the road obsolete. Scientists at the Cornell Lab of Ornithology are developing radio transmitters that use a clever combination of tricks to track birds automatically over greater distances. Conventional radio transmitters weigh about a tenth as much as those of 40 years ago, but one of their biggest drawbacks is their short battery life. They function for only 7 to 10 days before the batteries wear out, making it difficult to follow a migratory songbird very far. Now engineers at the Lab of Ornithology are designing transmitters that can be programmed to turn off when the bird is inactive, rather than beeping incessantly for 24 hours a day. Researchers will also be able to specify when the transmitter should produce a signal to provide an update on the bird's location. These energy-saving measures will extend the precious battery life to years.

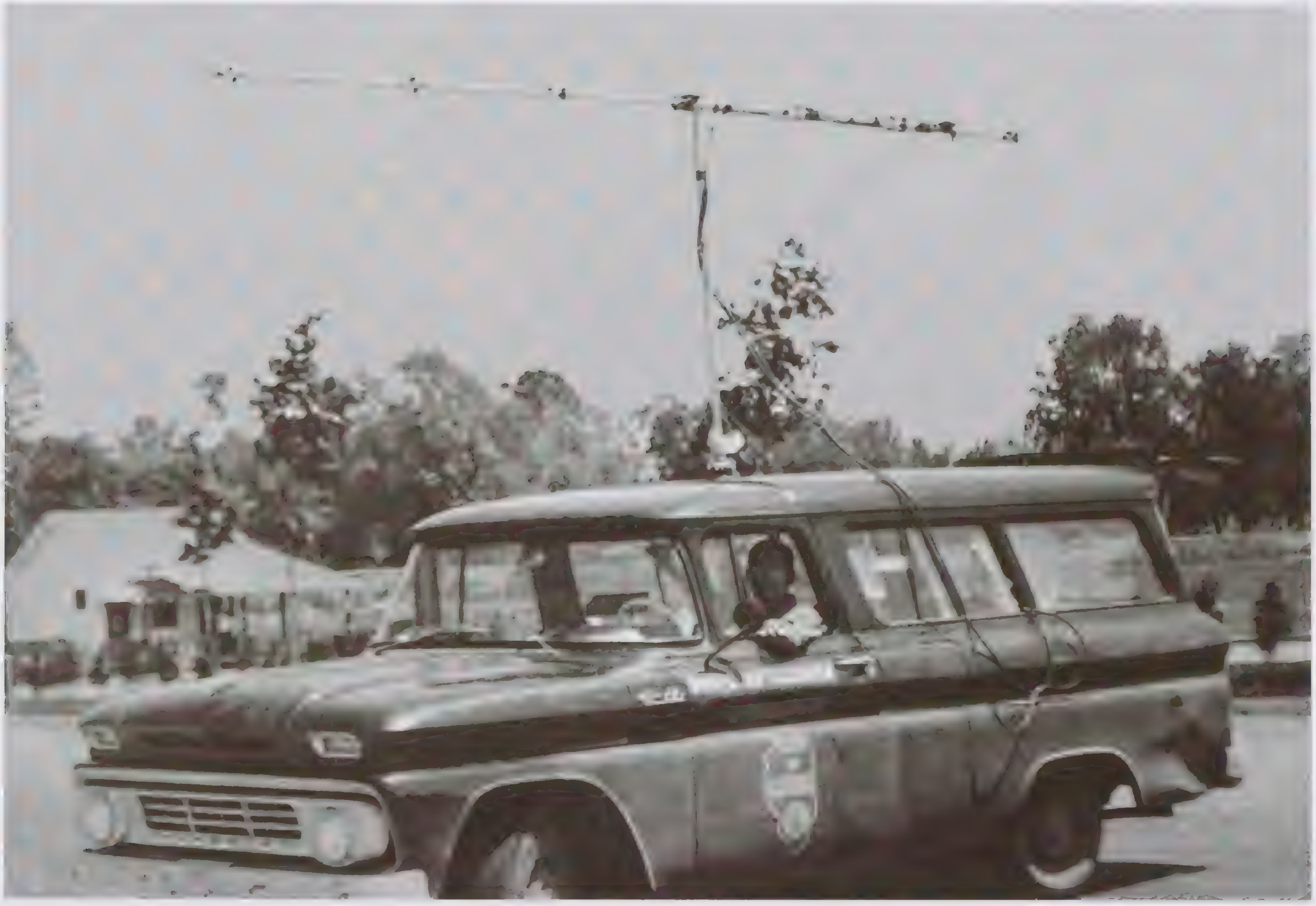
Instead of following birds closely from vehicles, researchers could implement technology used in cellular telephone networks to track birds automatically. A network of receiving stations would detect signals from the transmitters and identify the bird's position. If the bird flies out of range of receiving stations, the transmitter could collect and store information about the bird's location and relay the data when the bird returns within range of a station.

The transmitters will record information about where the birds are by using light sensors that detect the onset of dawn and dusk. Comparing those times against a standard clock, such as Greenwich Mean Time, could reveal where the bird is as it travels over the surface of the earth. Heart rate, temperature, or humidity detectors could also be included in a transmitter. Researchers could put transmitters on migratory birds before they leave in summer and collect information about their migratory route, environment, and physiology when the birds return from the tropics in spring.

To increase the chances of gathering data even from birds that never make it back, researchers from the Lab of Ornithology and the Cornell College of Engineering are designing transmitters that can exchange information with one another when two migrants approach within a certain range. If one bird perishes, researchers could still gather data about both birds from the surviving bird's transmitter. The transmitters could even be used to exchange information from different kinds of animals. Transmitters carried by whales in the ocean could exchange data with seabirds migrating overhead. When the seabirds return to their breeding colony, researchers could pick up information about where the birds and the whales have been.

Martin Wikelski, meanwhile, is working with an international team of scientists to track songbirds from space. The birds would carry transmitters that emit signals picked up by satellites and report to a computer back on earth. Finding out where the bird traveled overnight would be as simple as waking up in the morning and checking a computer screen.

Minute signals from radio transmitters could be detected using radio telescopes that have been trained on the distant universe to pick up faint signals from outer space. If a radio



COURTESY OF ILLINOIS NATURAL HISTORY SURVEY

Bill Cochran pursued migrating thrushes for hundreds of miles in a carry-all truck. To help pick up the signals, an assistant rotated the 14-foot-long directional antenna from the backseat.

telescope were sent to space to listen to sounds from the earth, it could detect weak signals from a songbird carrying a transmitter on its back. "For radio astronomers, it's bread-and-butter technology," Wikelski said.

The biggest obstacle is not technological, Wikelski argues. Rather, it's in convincing NASA to divert some of its attention from projects on Mars and other places in the universe to focus on the planet right beneath our feet. "We need about $30 million—a ridiculously cheap sum for a project of that scale. I would bet more than that is spent annually on isotopic analyses, DNA analyses, banding of birds, and all that, trying to figure out the connectivity of birds. We would gain a tremendous amount of information if, in addition to using these traditional methods, we could detect the movements of birds directly from space."

Understanding the connectivity of birds—the connections between all the places they inhabit throughout the year—has tremendous implications for conservation. First, simply knowing where the birds go is important. When Swainson's Hawks were tracked by satellite to Argentina, biologists found that thousands of the hawks were dying on the pampas from an agricultural pesticide intended to kill grasshoppers. These findings mobilized an international campaign to discourage the use of the pesticide and raise awareness about its harmful effects. In addition to learning more about where birds winter, tracking them for their entire migratory route would help identify which areas need to be protected to ensure they can reach their destinations.

New methods of tracking would open the way to exploring the movements of birds around the globe. "I would love to know how Bar-tailed Godwits go from Alaska to New Zealand," Wikelski said. What about the warblers that supposedly fly out over Boston and come down in the Caribbean—is that what they really do? Then there's migration within the tropics—we have absolutely no clue what's happening there. There are two months of the year when millions of birds from Europe disappear in Africa. Nobody knows where they go. All of those questions are out there to solve." ■

This article was adapted from Songbird Journeys: Four Seasons in the Lives of Migratory Birds *(Walker & Company, 2006), by Miyoko Chu. The section about Graber's flight was based on the article, "Night Flight with a Thrush," by Richard Graber,* Audubon *67:368-74, 1965.*

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THE FEAST OF OPTICAL ILLUSION

by Jack Connor

Are swallows as punctual as we like to think?

From coast to coast across America, swallows on migration are celebrated as models of punctuality by legend and local lore. In California, as all birders know, the Cliff Swallows of San Juan Capistrano are said to return to their nests at the old mission each year on the very same day, March 19, the Feast of St. Joseph. Crowds gather to watch and cheer their arrival. In my little town in New Jersey, it's Barn Swallows that are celebrated and the crowds are not quite as large, but the legend of the birds' timely return to the Port Republic Bridge has spread as far as I have been able to push it.

"They come back on April 15 every year, just like clockwork," I've told anyone who would listen. "They're traveling north for weeks all the way from Brazil and Argentina, thousands of miles, and they arrive back here at their colony under the bridge on the very same day each year—the Feast of Uncle Sam. Isn't that mind-boggling?"

Some doubting Thomases have tried to shake my faith, of course. "Are you sure it's always the exact same day?" they ask.

"Listen," I have explained coolly. "Every year when I spot the first one, I write the date down on the perpetual calendar in our kitchen. I've been recording the return for 17 years in a row. Two or three times they've come back on the 14th and a couple of times on the 16th, but almost always it's the 15th—right on the dot. Why don't you join me this year? I'll call you up at dawn, and we can walk down to the bridge together, so you can see the show for yourself."

For some reason, this comment generally sends my listeners off on a search for another hot dog or a second beer. I can't seem to build up that crowd of observers waiting the re-arrival in California style.

Nevertheless, my swallow data seemed rock solid—until the other day when I actually stopped to look at it.

My wife and I have been recording notes about local birds, plants, and butterflies on the calendar since we moved here in 1989. April has become the most cluttered month. Notes such as "swallows at bridge," "first Barn Swallow," or just "BASW" appear 12 times on the April page, as follows:

April 7 (2002)
April 12 (1992, '93, '95, '05)
April 13 (1991)
April 14 (1993)
April 15 (1998, '03)
April 17 (2001)
April 20 (1990)
April 25 (1997)

Even a cursory glance indicates problems with my story. Only twice have the swallows returned on April 15th, only once on the 14th, and never (that I noted) on the 16th. In 2002 they seem to have come back more than a week ahead of schedule, and in 1997 they were 10 days "late." Look closer and the story grows messier still. Nearly a third of the returns, five of seventeen—1994, '96, '99, '00, and '04—I missed entirely. In 1993 I recorded their return as April 12th, then 48 hours later, scribbled it down again as the 14th. And my other notes are not consistent. Does the abbreviation "BASW" without detail on April 7, 2002, indicate a swallow back at the bridge—or simply the first individual I came upon anywhere in town, which could have been, of course, a bird nesting elsewhere or a migrant headed farther north?

Also, I now wonder how much my actions have distorted the record. I don't visit the bridge every day, even in mid-April when the birds are due, and I seem to remember several years looking at the calendar, realizing the date was near or past, and hurrying down to the bridge. But if they had returned by then, how could I know they had only just arrived? Should an arrival date marked April 15th actually be interpreted as a return that might have happened on any day over the previous two weeks?

Take a look at accounts of the Cliff Swallows at San Juan Capistrano and you'll see fudging seems to go on there also: any early-arriving birds, for example, that are spotted back at the mission before March 19 are dismissed as "scouts."

What started me thinking about all this is an inspiring and iconoclastic article you can find on the Internet with a couple of clicks: "The spring migration pattern at Fortine, Montana" by Winton Weydemeyer, originally published in *The Condor* 75:400-413, 1973.

Weydemeyer—rancher, tree farmer, state senator, photographer, naturalist, and lifelong conservationist—tracked the return of migratory birds to his family's farm in the Whitefish Range in extreme northwest Montana, 15 miles south of the Canada border, for 50 years. Yes, 50. Weydemeyer's records detail the arrival of 138 species of birds, Common Loon to Chestnut-collared Longspur, each spring from 1920–1970, with only a half-dozen years missed, when his brother Donald kept the records.

See the article for Weydemeyer's discussion of the accuracy of his record keeping and the inevitable difficulties

CLIFF BEITTEL

The Barn Swallows return to the Port Republic Bridge each year on April 15—the Feast of Uncle Sam—or do they?

of noting true "first arrivals." In brief, he was a far more careful compiler than most of us, and he continued the data gathering his entire adult life. Is there an account anywhere else of such a thorough record of migration assembled by a single individual over such an extensive length of time?

What makes Weydemeyer's analysis especially intriguing, however, is his tactful questioning of several "principles" of migration that are still widely believed today. He quotes Alexander Wetmore's 1930 passage in *The Migration of Birds*, for example, " . . . birds come and go with surprising regularity on their appointed date. Arrival in spring is particularly punctual . . . and unusual is the season when the first of the travelers fail to put in their appearance within a few days of the average date." It's a sentiment many of us birders have repeated countless times.

But, notes Weydemeyer in his understated tone, his data "at least in the locality studied," stand "in marked contrast to this principle." His delightful, hand-drawn graphs reveal a very different picture than the one most of us keep in our heads. In truth, he claims, "the arrival dates of birds cannot be neatly catalogued nor can the order of their appearance be forecast." The average arrival dates of the 99 species for which he compiled the most complete records varies over 36.6 days! Red-eyed Vireo and Wilson's Phalarope proved the most punctual migrants in Fortine, with arrival dates spread over 16 days; at the other extreme, the Pine Siskin's return was spread over 94 days.

And those "punctual" swallows? Both Cliff and Barn swallows proved themselves barely average against the field. Their spring arrival dates were spread over 37 and 32 days respectively. The Rough-winged Swallow's range was 46 days and the Tree Swallow's 45. Weydemeyer uses the Tree Swallow, whose first arrival date varied from February 29 to April 15, as evidence that even the sequence of arrivals cannot be predicted. In other words, a "late" spring for one species was not necessarily late for another. The Tree Swallow's position in the spring sequence of all 138 species varied from 4th to 28th, a difference of 24 spots, which is a typical variation for all species.

Space prevents me from doing Weydemeyer's analysis justice (he compares weather from year to year, sorts species by food sources, and punctures several other standard explanations of migration timing), and I urge any interested reader to Google to the original article.

But perhaps out there somewhere lives a reader interested in proving Weydemeyer wrong. Perhaps you'd like to demonstrate that what is true at Fortine, Montana, is not the case at your hometown site. If you plan to repeat his methods, you have embarked on what could be a lifelong adventure. I hope you are determined, diligent, and—at the moment—very young. Good luck! ■

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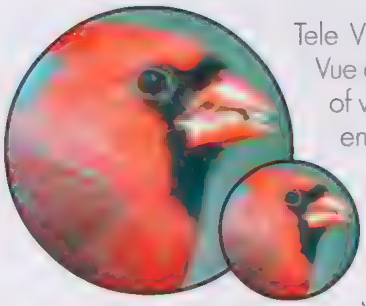

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THE SECOND COMING OF THE LORD GOD BIRD

by Pete Dunne

Ivory-billed Woodpecker *(Campephilus principalis)*

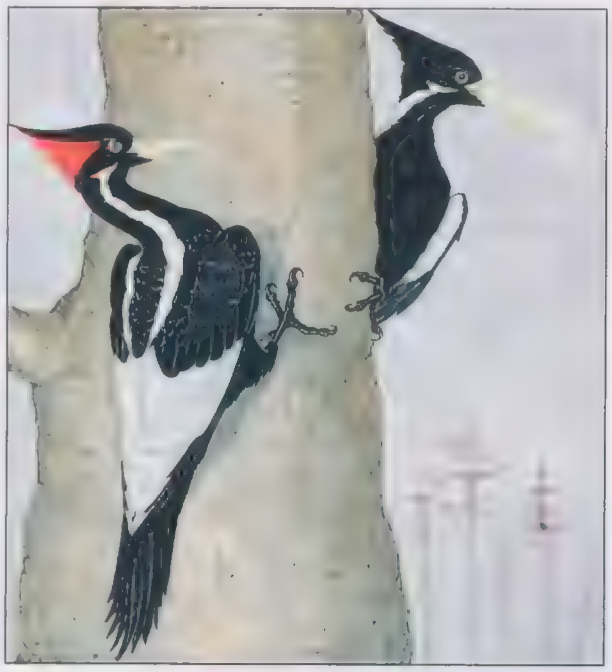
STATUS/DISTRIBUTION: Exceedingly rare resident of mature southern riverside forests. For more than half a century believed extinct. In 2004, a single individual was rediscovered in eastern Arkansas.

HABITAT: Extensive bottomland swamp forests dominated by mature hardwoods (oaks, sweetgum, cypress, tupelo); historically pine forest. Large numbers of standing dead trees infested with beetle larvae are an essential component.

COHABITANTS: Woodchuck, Pileated Woodpecker, Lazarus.

MOVEMENTS/MIGRATION: Nonmigratory, but is known to shift its territory in response to food availability.

DESCRIPTION: An impressive crested, black-and-white, and (males only) red woodpecker whose size and splendor were enough to provoke observers to exclaim: "Lawd, Gahd!" Very large, approximately three inches longer than a Pileated Woodpecker, which is the only American bird that can be confused with it. In all plumages, distinguished from pileated by showing limited white on the face (white does not reach the bill), having a black chin (white in pileated), and when perched shows one or two (depending on the angle) white stripes running down the back, merging into an extensive white patch across the lower back (folded wings). Except for the neck, face, and (sometimes) one or two small patches of white winking through the folded wings, bodies of Pileated Woodpeckers are wholly black. Crests of males are bright red; females are black (on pileated, both males and females show red crests). Young are browner than adults and have shorter crests. The ivory-colored bill, while distinctive, may be confused with the sometimes pale bill of a pileated.



BEHAVIOR: Forages over great distances, sometimes moving several miles in a day, across a territory of between three and six miles. Usually feeds above mid-height in dead or dying trees, but accounts exist of birds foraging on the ground. Feeds by prying bark from trees, both by hammering with sideways blows and by levering loose bark away with its bill. Bark-stripped trees may show where ivory-bills have been foraging. Also excavates borings like pileateds. Historically, birds were commonly seen in pairs. This species is a late riser, often not leaving roost holes until after sunrise. It then flies to feed (sometimes less than a mile; sometimes as many as three or more miles). Generally works its way back to the roost site during the day, arriving after sunset. Communicates by making double-taps with the second one sounding like an "immediate echo" of the first (Tanner, 1942).

FLIGHT: Strong, direct, fast, and straight, usually without undulations. In flight the bird is reported to look "surprisingly like a [Northern] Pintail," showing a long and slender neck, long tapering tail, and rather narrow wings (Tanner). By comparison, a pileated looks more compact. The bold, broad, white trailing edge of the ivory-bill's upper wings renders it almost unmistakable. By comparison, the upperwing of pileated shows conspicuous (but not extensive) white windows limited to the base of the outer flight feathers. And the underwings of the pileated, while extensively white, have a black trailing edge (the ivory-bill shows a white trailing edge above and below).

VOCALIZATIONS: Call is a nasal *yap* or *kent* that has been described as sounding like the call of a loud Red-breasted Nuthatch and in tone and quality like a note blown through a clarinet mouthpiece or a tinhorn. The call is sometimes repeated in a rapid series or doubled with the second note in a lower pitch.

This species account is from Pete Dunne's Essential Field Guide Companion *(Houghton Mifflin, 2006).*

ILLUSTRATION BY JEFF SIPPLE

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GREETINGS FROM SAPSUCKER WOODS

This past May, I had the pleasure of visiting a Peregrine Falcon nest with Scott Francis, an old friend I hadn't seen for several years. The birds occupied a lofty beach cliff in Southern California, and Scott was there to band the young—a male and a female, approximately four weeks old.

What made this nest special was its location: a traditional eyrie cliff that hadn't been occupied by falcons in more than half a century. Most peregrines in the state now nest on manmade structures such as buildings and huge bridges, because during the Peregrine Falcon reintroduction efforts of the late 20th century, the young birds were released there, in areas safe from predation by Great Horned Owls and Golden Eagles. Now in places across America, natural cliffs are finally being reoccuppied.

Scott and I had both been interested in falcons since our teens in the 1960s, and we took an active part in the Peregrine Falcon recovery. It's great to see the work of the hundreds of falcon enthusiasts who helped in this effort beginning to pay off so handsomely.

For us, this is a dream come true, being able to watch wild Peregrine Falcons bringing food to their young in a natural nest site, so close to the area where we both grew up. In the 1960s, we could not have imagined this happening in our lifetime. The birds had become so rare. Everything seemed to point toward their eventual extinction as the environment became more and more contaminated. I salute everyone who pitched in to make the Peregrine Falcon's recovery possible.

—*Tim Gallagher*

Cover: A Western Sandpiper perches atop a wild celery stalk above its nest near Nome, Alaska. Soon this bird will join the massive flocks of shorebirds migrating thousands of miles to wintering areas far to the south. Photograph by Cliff Beittel.

Right: Two young Peregrine Falcons peer out from their nest ledge on a lofty beach cliff in Southern California. Photograph by Anthony Mercieca.

Back cover: An adult male Common Yellowthroat. This widespread species is found across North America in marshes and brushy vegetation near water. Photograph by Larry Ditto/KAC Productions.

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SUMMER 2006 VOLUME 25 NUMBER 3

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Letters

MARIE READ

MORE FILM FANS

I thought I'd pass along some comments in response to the requested readers' assessment of the photographs shown on pages 10 and 11 ("Can't Beat 'em, Join 'em!" Picture Perfect, Winter 2006). I shared them with about a dozen other people, and they all favored the slide film image on page 10. They liked its color saturation and contrast in comparison with the digital photograph. I personally agree with them, although I do like the increased detail that can be seen in the bird's black wing and cap in the digital image. I assume that further digital enhancement could improve the color saturation and the contrast to make this as appealing as the one taken with film. Keep up the good work. I look forward to every issue.

Andre LaClair
Port Crane, New York

Congratulations to Marie Read for her article comparing digital with film images. It is a topic of universal interest. Now I'm using both. I use my film camera when I need a long lens, otherwise it is digital.

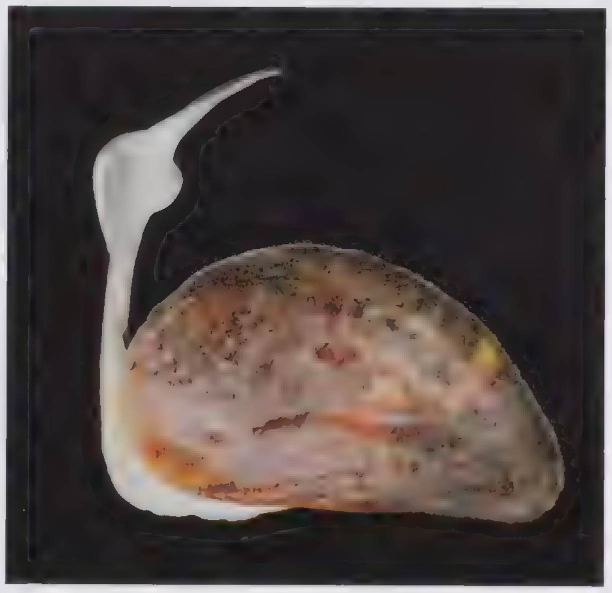
Wilbur Comstock
Penn Yan, New York

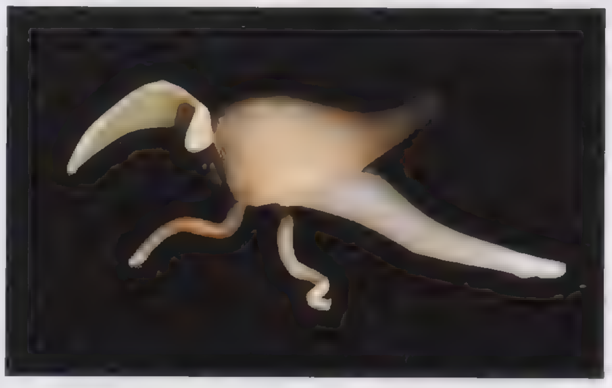
A SHELL GAME

The inclusion of the peculiar photographs in the Focus section of the Winter 2006 edition puzzles me, as they have only the vaguest resemblance to birds. The top photograph perhaps most resembles a large, germinating dicotyledonous seed, while the bottom right image suggests some strange arthropod more than a bird. One wonders whether the academic accolades of the photographer, amply noted in the caption, were more important than the aesthetic qualities of the pictures or their relevance to an ornithological publication.

Congratulations for another excellent and entertaining issue in other regards.

John T. Doyen
Berkeley, California





THOMAS EISNER (2)

We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

BirdNews

Art at the Lab

Imagine a slow-moving brook, its riparian edges crowded with vegetation at the height of summer. As you watch, the slow gray shadow of a Great Blue Heron cuts a thin wake across the dark green reflection.

This evocative scene was captured in oils by noted artist Susan Bull Riley and is but one of her fascinating paintings on display this summer at the Lab of Ornithology. Susan's depictions of birds and landscapes begin the 2006 Art Exhibition Series. An exhibit this fall will feature a nearly complete catalog of bird prints by Currier & Ives, while the Lab's Adelson Library will concurrently display *Illustrations of the Nests and Eggs of Birds of Ohio*, a rare 19th-century manuscript with hand-painted lithographs of nests and eggs. The works that Louis Agassiz Fuertes created for the book *Citizen Bird* will also be on display.

From the start, the Lab of Ornithology has had a close relationship with bird art. One of our first lecturers was Louis Agassiz Fuertes himself, who with Lab founder Arthur A. Allen discovered the Yellow-bellied Sapsucker nest here that inspired the name Sapsucker Woods for our bird sanctuary. In his lectures, Fuertes used his skills at illustrating birds and his knowledge of their biology and natural history to present information suitable for academics and the general public. Fuertes and Allen—who in addition to being an ornithologist was a noted photographer—were always eager to share their artistic talents and biological knowledge with the public.

We still strive to connect with people to increase knowledge about birds and their conservation needs. Lab members assist by helping their children and friends discover the joys of bird study. Our extensive art collection also enables us to deliver our conservation message to people who might not be interested in science or birding but are attracted by the beauty of the art on display here.

Since the 2003 grand opening of the Johnson Center for Birds and Biodiversity, we have had an airy, sunlit space to display the finest works of avian art by the likes of Louis Agassiz Fuertes, John James Audubon, and contemporary artists as well. We have already hosted three major exhibits in our auditorium gallery, featuring the art of Evan Barbour, Karen Allaben-Confer, and William C. Dilger. These and the upcoming exhibits are just the beginning. We invite you to visit soon and help us celebrate the beauty of birds in art.

—*Charles Eldermire*

KEN ROSENBERG

VICTORY!

They said it couldn't be done. They said that after last year's dismal fourth-place finish in the World Series of Birding, the glory days for the mighty Sapsuckers were over. But we're here to say that the critics were wrong. We are proud to announce that on May 13, 2006, the Sapsuckers won it all, shattering their own big-day record and taking top honors in the 2006 World Series of Birding.

Racing across the state of New Jersey from midnight to midnight on that immortal day, the team identified a whopping 229 species, surpassing the second-place team by 10 species and beating the Sapsuckers' own big-day record by 5. And they were only 2 species short of the all-time record of 231 species for the World Series of Birding.

The Sapsuckers also set a new record for the most money raised by a World Series team. Thanks to our generous members and friends who supported the team, the Lab of Ornithology raised $786.02 per species in pledges—a grand total of nearly $180,000. And all of the money raised will be used for conservation, thanks to team sponsor Swarovski Optik, which paid the big-day expenses for the Sapsuckers.

Above, the Sapsuckers—(left to right) Brian Sullivan, Chris Wood, Steve Kelling, Ken Rosenberg, and John Fitzpatrick—pose proudly with the Stearns Trophy (at left) for best out-of-state team and the Urner-Stone cup (center) for the overall winner.

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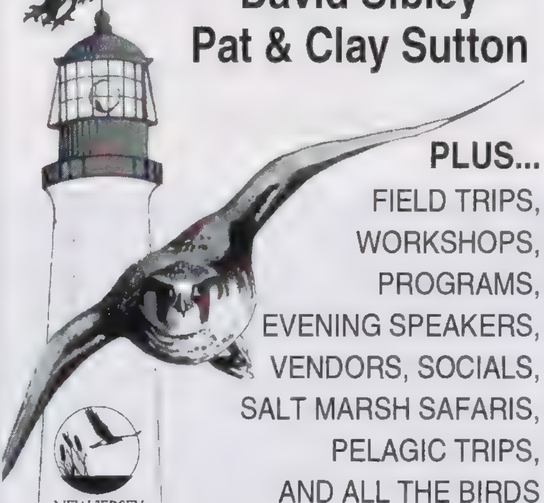

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ONE LAST CHANCE

by David S. Wilcove

For some rare species, one small scrap of habitat may be the final stronghold

Over the past two decades, the field of conservation biology has blossomed, giving conservation practitioners an array of new insights and tools for conserving biological diversity. Among these is the realization that small, isolated populations of plants and animals are at far greater risk of extinction than larger, interconnected populations. Moreover, we now know that many of the important ecological processes that maintain biodiversity are disrupted when ecosystems are fragmented, leading to further losses of species. Conservationists are turning their attention to protecting large landscapes and suites of species rather than isolated sites for individual species. A top scientist at one large conservation organization recently boasted that his organization no longer bothers to protect little patches of forest or prairie that harbor one or two rare plants.

That's all well and good except for one unfortunate fact: for the plant in question, that little scrap of habitat may be the last stronghold. If we fail to protect the site, the species will disappear. Preventing extinction means protecting species where they occur, not where we would like them to occur.

This point was driven home to me by an important study that appeared recently in the *Proceedings of the National Academy of Sciences.* Written by 30 scientists from more than a dozen conservation organizations, research centers, and universities, it identified "centers of imminent extinction" around the globe. Each of the sites harbors the last known population of an endangered species (or, in some cases, 95 percent or more of the global population of an endangered species). The authors focused on five groups that have been thoroughly inventoried around the world: birds, mammals, amphibians, selected reptiles (turtles, crocodiles, and iguanas), and conifers. All told, they identified 794 species that have been reduced to single populations, spread out among 595 sites. (Most sites contained the last population of a single species, but at least 13 sites harbored the last remaining populations of 5 or more species.)

The geographical distribution of these sites provides some important insights into the nature of our current extinction crisis. Whereas the vast majority of extinctions in previous centuries have involved species on islands, more than 60 percent of the sites in the new report are on continents. Thus, the wave of human-caused extinctions that began on islands such as Mauritius and Réunion now appears to be spreading to the mainland. The majority of the sites are in the species-rich tropics, in countries such as Brazil, Colombia, and Madagascar.

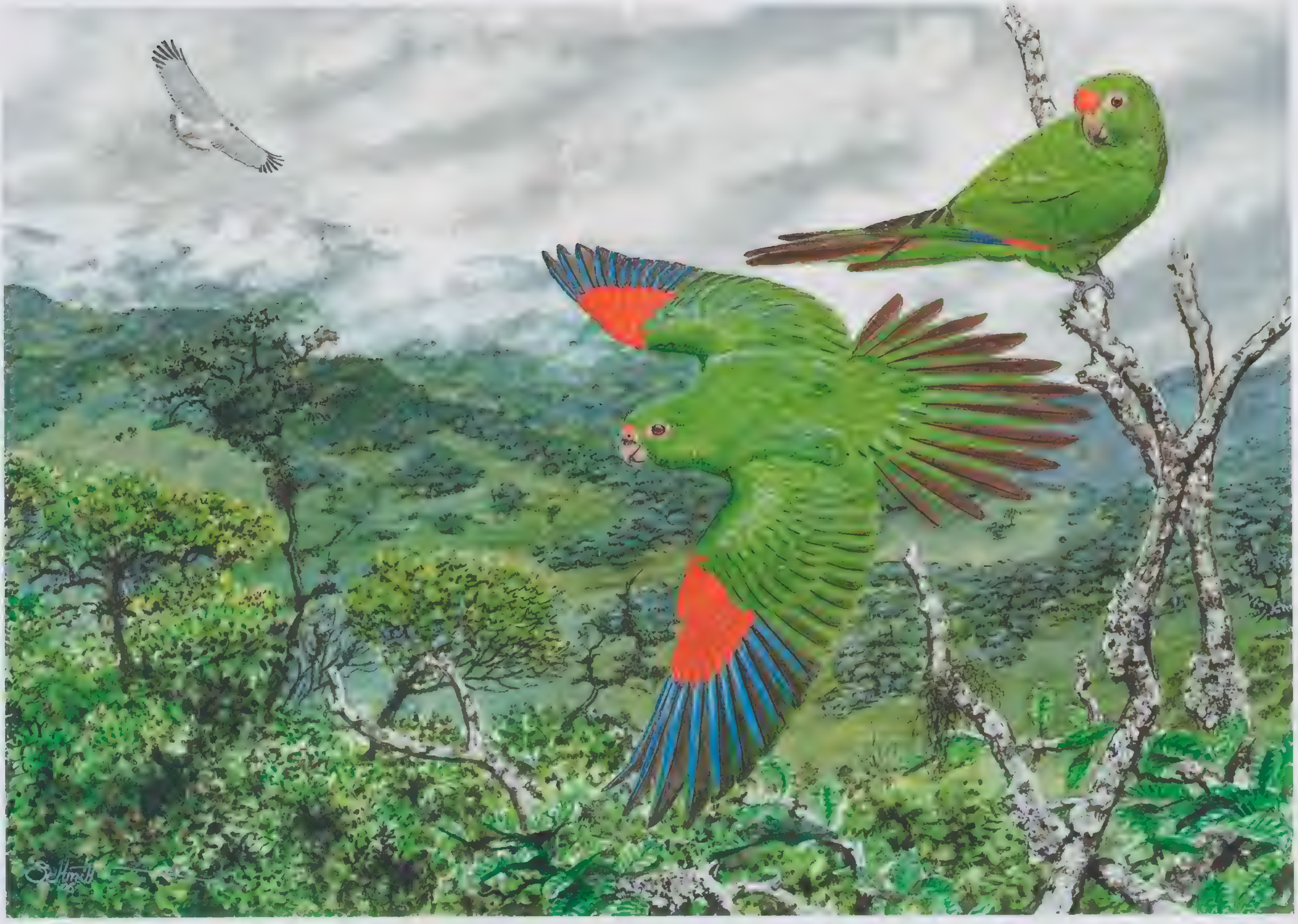
The United States harbors 24 sites, including 12 in the continental United States, 6 in Hawaii, 4 in Puerto Rico, and 2 in the Northern Mariana Islands. The sites in Hawaii, Puerto Rico, and the Northern Marianas come as no surprise, but even an astute naturalist might overlook a few of the mainland ones—for example, the General Davis Cave, home of the West Virginia spring salamander, and Mississippi's Pascagoula River, where the last yellow-blotched map turtles live. Astute bird watchers, however, will recognize the Gunnison Basin in Colorado, which harbors the Gunnison Sage-Grouse, and Aransas National Wildlife Refuge in Texas, winter refuge for the last truly wild flock of Whooping Cranes.

The identification of these 595 sites has prompted a number of welcome developments. Foremost among them is the creation of the Alliance for Zero Extinction (AZE), a coalition of more than 60 conservation organizations from around the world that is dedicated to identifying and protecting the last remaining habitats of critically endangered species (see www.zeroextinction.org). The American Bird Conservancy is spearheading conservation efforts for all AZE bird sites in the New World.

In January, I had the opportunity to see some of the accomplishments of one of the AZE members, Fundación Jocotoco, in Ecuador (www.fjocotoco.org). Our group, consisting of ecologists from the University of Florida, the University of Central Florida, and Princeton University, visited two of the foundation's reserves. We were guided by José Illanes, a young Ecuadorian who grew up in an Amazonian village and soon became one of the nation's finest bird watchers.

Our first stop was the Buenaventura Reserve in the southwestern part of the country. In July 1999, Fundación Jocotoco acquired approximately 750 acres of forest and pastureland to protect the recently described El Oro Parakeet. At the time, none of the habitat within the tiny range of this parakeet was protected in any park or preserve. Subsequently, the reserve has expanded to more than 3,700 acres, and Fundación Jocotoco is planting native trees to reforest previously cleared areas. Bird watchers now have the option of staying at a new lodge there. We spent a day and a half at the reserve and, with José's expert assistance, managed to see

ILLUSTRATION BY JOHN SCHMITT



The Fundación Jocotoco acquired approximately 750 acres of forest in Ecuador in 1999 to protect the El Oro Parakeet (above). Prior to that, none of the habitat within this bird's tiny range was protected in a park or preserve.

an array of exciting birds, including a male Golden-headed Quetzal, two endangered Ochre-bellied Doves, and six El Oro Parakeets. Our first sighting of the parakeets was less than satisfying—a pair flying rapidly away—but we subsequently spotted another group of four perched atop some trees in a clearing. The El Oro Parakeet is not a particularly striking parakeet (it is mostly green with a patch of red feathers above the bill and a ring of white skin around the eye), but it is rare and local, and we were delighted to find it. Thanks to the work of Fundación Jocotoco and its partners, the reserve's parakeet population has increased from about 120 birds to 150.

For us, the indisputable star of the Buenaventura Reserve was a very different bird, the Long-wattled Umbrellabird. Restricted to subtropical forests on the west slope of the Andes in Colombia and Ecuador, the Long-wattled Umbrellabird is one of those creatures I had long dreamed of seeing but never really expected to find. A lone individual sitting in a small cage at the San Diego Zoo was the closest I had gotten. However, the Buenaventura Reserve contains a patch of young forest where male umbrellabirds gather regularly to display to largely disinterested females, and José was confident we would find one. He was right. Within an hour or two of arriving at the site, José calmly announced, "There's an umbrellabird," and pointed to a black object sitting about 20 feet up in a nearby sapling. After examining that bird for more than an hour through binoculars and telescope, I deduced the recipe for making a male Long-wattled Umbrellabird: take one crow and shorten its tail by half. Add an early-Beatles' shag haircut. Then attach a long wattle covered in black feathers to its throat.

The truly remarkable thing about the umbrellabird is its ability to contract or expand that wattle. When it flies, it can contract the wattle to about half the length of its body. Upon alighting, however, the umbrellabird slowly expands the wattle, until its length equals that of the bird, measured from tip of bill to end of tail.

From Buenaventura, we headed southwest to the Tapichalaca Reserve, acquired by Fundación Jocotoco to preserve the only known locale for the Jocotoco Antpitta. (Indeed, it was the discovery of this large antpitta, and the recognition by Robert Ridgely and others that its habitat and the habitats of other rare Ecuadorian birds were not being protected, that prompted the creation of Fundación Jocotoco in 1998.) Here, the foundation has constructed a small guest lodge that merits multiple stars in any bird watcher's Michelin

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guide. Surrounded by thousands of acres of protected forest, the lodge teems with birds. Mountain-toucans call from nearby snags, while 10 or more species of hummingbirds buzz around the feeders in the front yard. A talented staff serves superb meals that are all too often abandoned in mid-bite when someone spots a rare tanager or ovenbird from the front porch. We devoted the better part of two days to searching for the reserve's flagship species, the elusive Jocotoco Antpitta, with only partial success. On two occasions, we heard the low-pitched hooting of the male, but the bird itself never deigned to come into view—a disappointment, to be sure, but one we quickly got over in light of all the other fine birds we saw.

Fewer than 20 pairs of Jocotoco Antpittas have been tallied thus far, which justifies its status as an endangered species. A cold-hearted scientist might argue that a bird so rare has little chance of survival, but history provides a number of examples of even rarer species that have rebounded. The Whooping Crane, for example, was down to just 14 individuals in the late 1930s; today there are well over 300 of them in the wild and roughly 135 in captivity. No more than seven Laysan Ducks survived in 1912; their current population numbers in the hundreds. Saving such species is unquestionably an uphill battle, but it is one that dedicated conservationists have proved themselves capable of winning time and time again. As conservation biologist Michael Soulé is fond of saying, there are no hopeless cases—only difficult cases and people without hope.

For the record, I am a big proponent of landscape-level conservation. We need to think big. But I hope there will always be individuals and organizations willing to extend a lifeline to the rarest of the rare. After all, preventive medicine may be the hot topic in public health today, but no one is talking about shutting down the emergency rooms.

Further Reading:

Ricketts, Taylor, et al. Pinpointing and preventing imminent extinctions. *Proceedings of the National Academy of Sciences,* Vol. 102, pp. 18,497-18,501; 2005.

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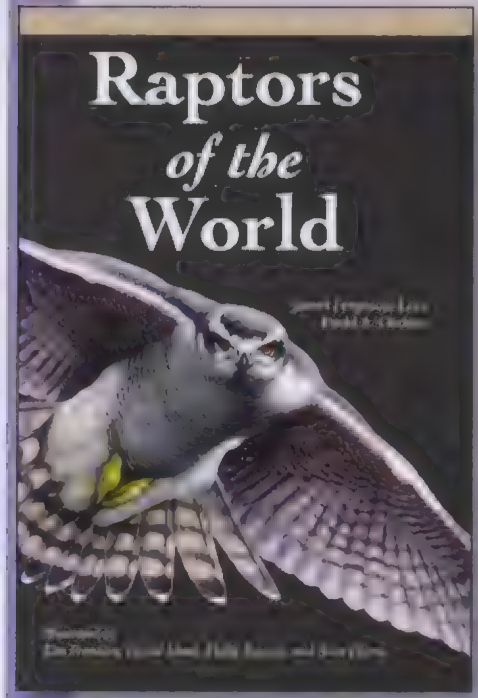
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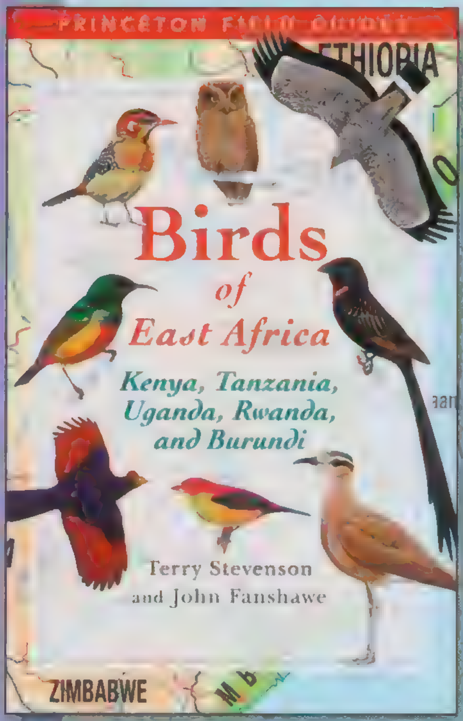
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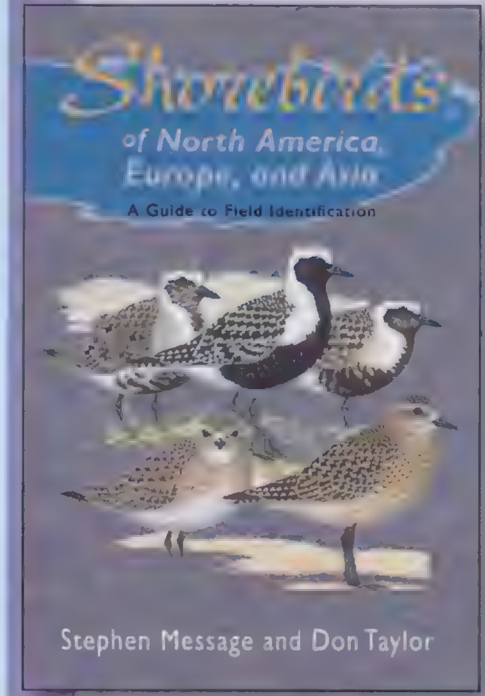
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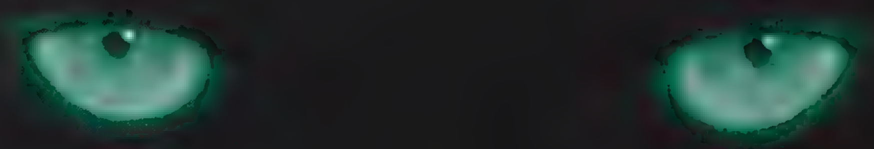

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BRUCE BEEHLER (2)

The remote Foja Mountains of western New Guinea have always been an area of mystery, seldom visited by scientists or even the indigenous people. Looking south from the Foja uplands across the great Mamberamo Basin, you can see the distant blue ridges of New Guinea's massive central cordillera (above). At right, a male Golden-fronted Bowerbird tidies up his bower.

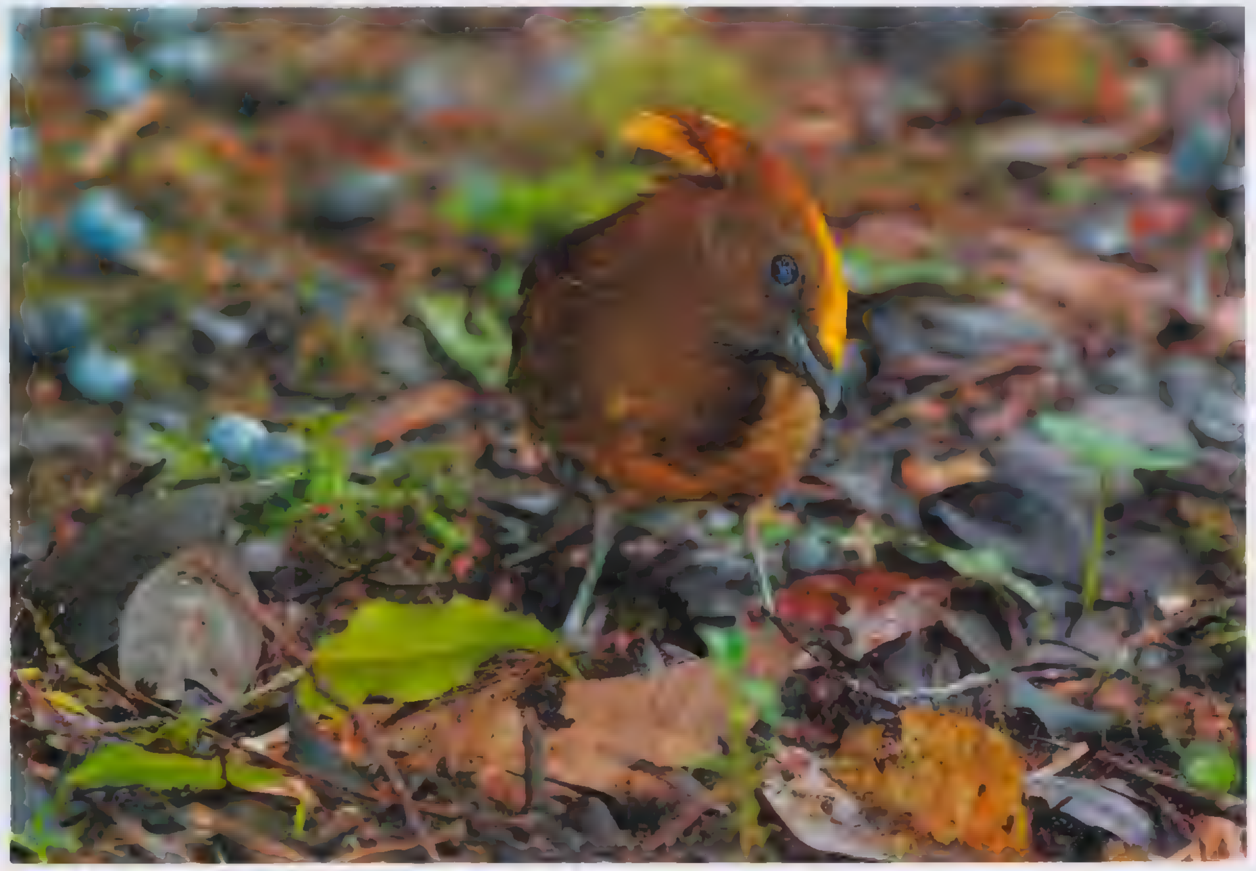
THE LOST WORLD

BY BRUCE BEEHLER

Exploring a pristine wilderness in western New Guinea

Few people realize that New Guinea is the highest and largest tropical island, bigger than Borneo or Madagascar. The western half of the great island has long been imbued with a sense of menace and allure. Over the years, this little-known tropical place, where Asia meets Oceania, has been called Netherlands New Guinea, Irian Barat, Irian Jaya, and now Papua (not to be confused with the sovereign state of Papua New Guinea, just to the east).

Alfred Russel Wallace had several close calls in western New Guinea in 1858, in pursuit of glittering beetles and plumed birds-



STEPHEN RICHARDS (2)

BRUCE BEEHLER

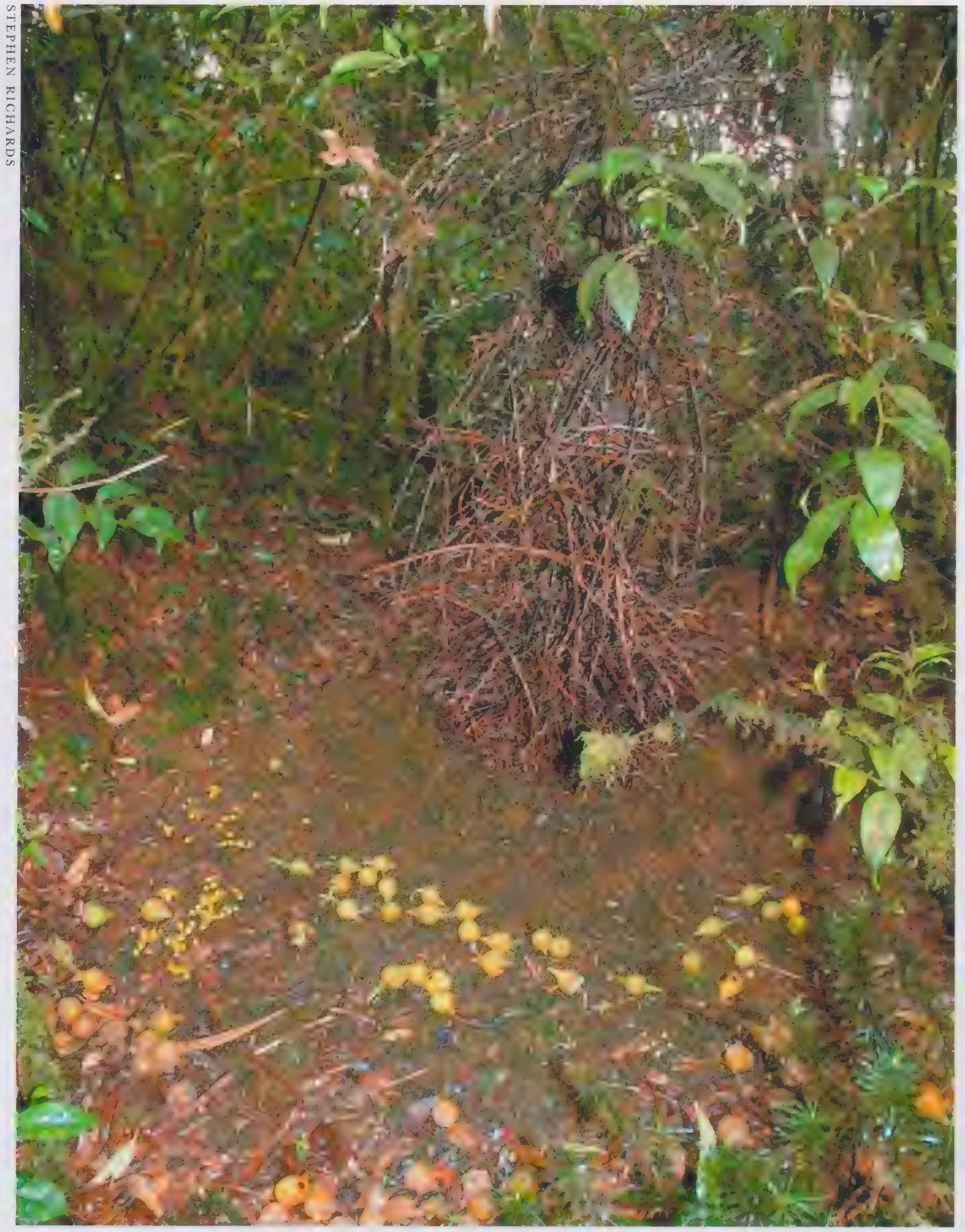
of-paradise. A youthful Michael Rockefeller, collecting traditional art in the fabled Asmat region, met his fate there in 1961, eaten by a crocodile or perhaps by an unfriendly tribe. In 1996, several young British field biologists were kidnapped by Papuan freedom fighters in the interior highlands and only escaped after months of captivity, cold, and deprivation. Nonetheless, western New Guinea remains enticing to naturalists addicted to untrammeled tropical rainforest.

Many ornithologists have been drawn here because of two persistent ornithological mysteries—one related to a bowerbird and the other to a bird-of-paradise. These two mysteries take us back to the Victorian era, a time of wealthy "cabinet naturalists," who often relied on more footloose souls to venture out and collect new plants and animals for the naturalists to describe and name. Whoever got hold of the first specimen could describe the new species, giving it a name and immortalizing himself at the same time.

In 1895, Lord Walter Rothschild, on his great estate of Tring, northwest of London, opened a crate from the Dutch collector Duivenbode that contained, among other things, a specimen of a gardener bowerbird of the genus *Amblyornis.* It was darker and browner than the other known species of the genus, but what was most remarkable was its golden-yellow erectile crest, which capped its entire crown and extended to the middle of its back. It was the most richly adorned, and

In a scouting trip many years earlier, the author located an opening in the forest (above left), which was used as a helicopter landing site during the 2005 expedition (below left). Above, the researchers set up camp nearby in a mossy forest adjacent to a bog, at an elevation of 1,650 meters (5,400 feet) above sea level.

STEPHEN RICHARDS



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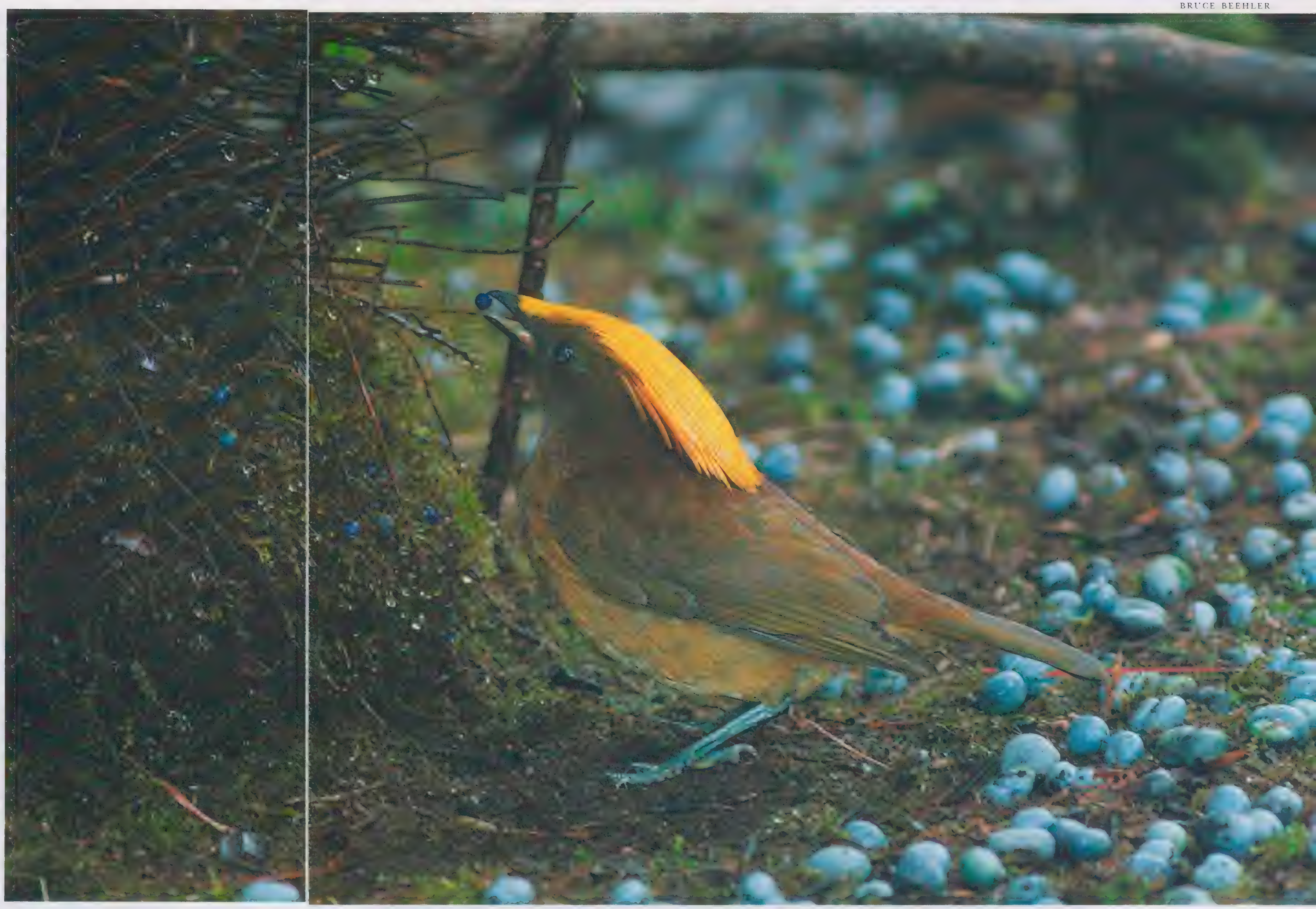

Yellow fruits (above left) decorate the moss and stick bower of the endemic Golden-fronted Bowerbird (left). The bower consists of a yard-high stick tower with a circular runway.

last discovered, of the gardener bowerbirds.

In his published description, Rothschild noted that the species came from an unknown location in western New Guinea. The specimen had been collected by indigenous hunters, who apparently never told Rothschild exactly where they got it. Given the inaccessibility and generally undeveloped nature of western New Guinea, this species' homeland was, in essence, unknown, and would remain so for 84 years.

Likewise, in 1897, the German ornithologist Otto Kleinschmidt described a new six-wired bird-of-paradise (*Parotia berlepschi*) from trade skins held in the private museum of Hans von Berlepsch—perhaps also from the trader Duivenbode. This was a velvety-black bird with six erectile headwires each with a little spatulate tip, an iridescent throat patch of bronze metallic feathers, and striking white erectile flank plumes. Like the bowerbird, this bird apparently came from an unknown location in western New Guinea.

Scientists launched at least a dozen expeditions to New Guinea in the subsequent 60 years to search for the homeland of this bowerbird and the bird-of-paradise. These expeditions, led by the likes of Anton August Bruijn, Ernst Mayr, E. Thomas Gilliard, Sten Bergman, and

An adult male Golden-fronted Bowerbird places tiny berries in the moss of the stick tower surrounded by large blue fruit the bird has laid out to impress visiting females.

BHL

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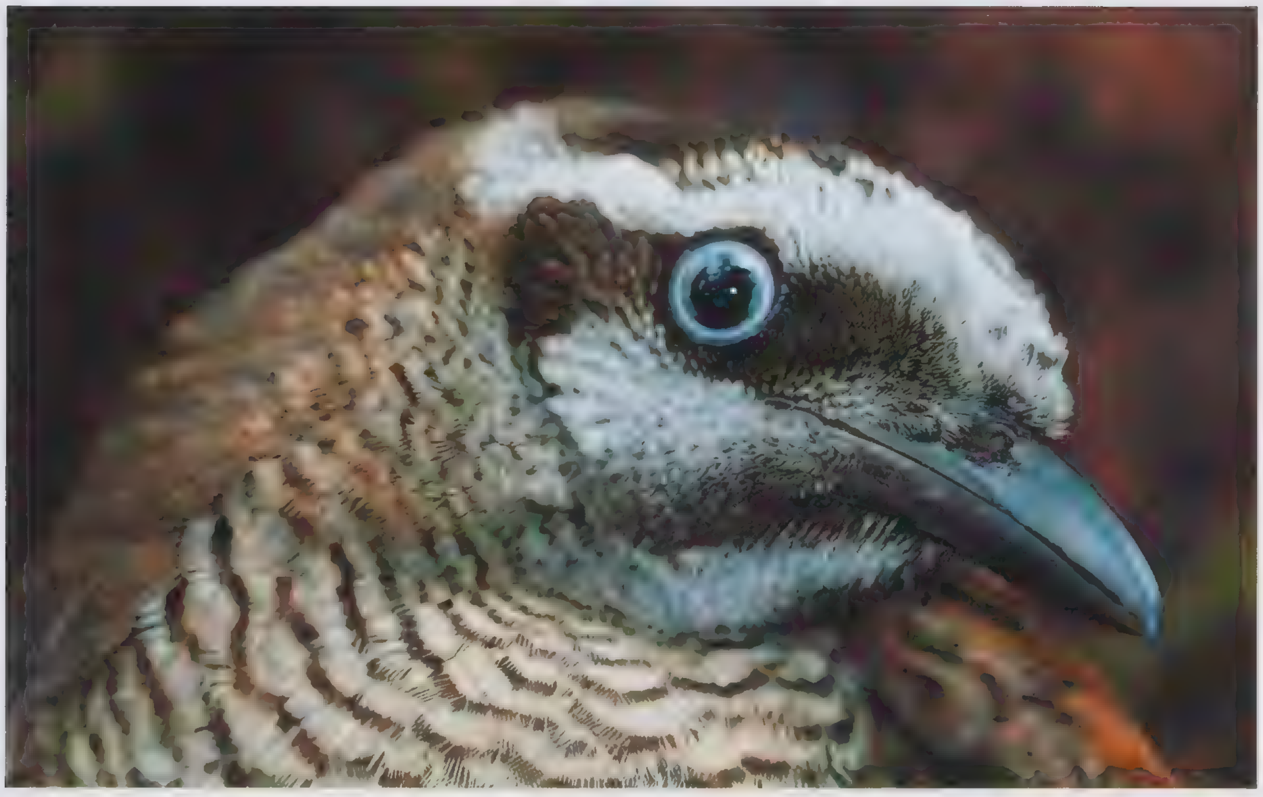
BRUCE BEEHLER (2)



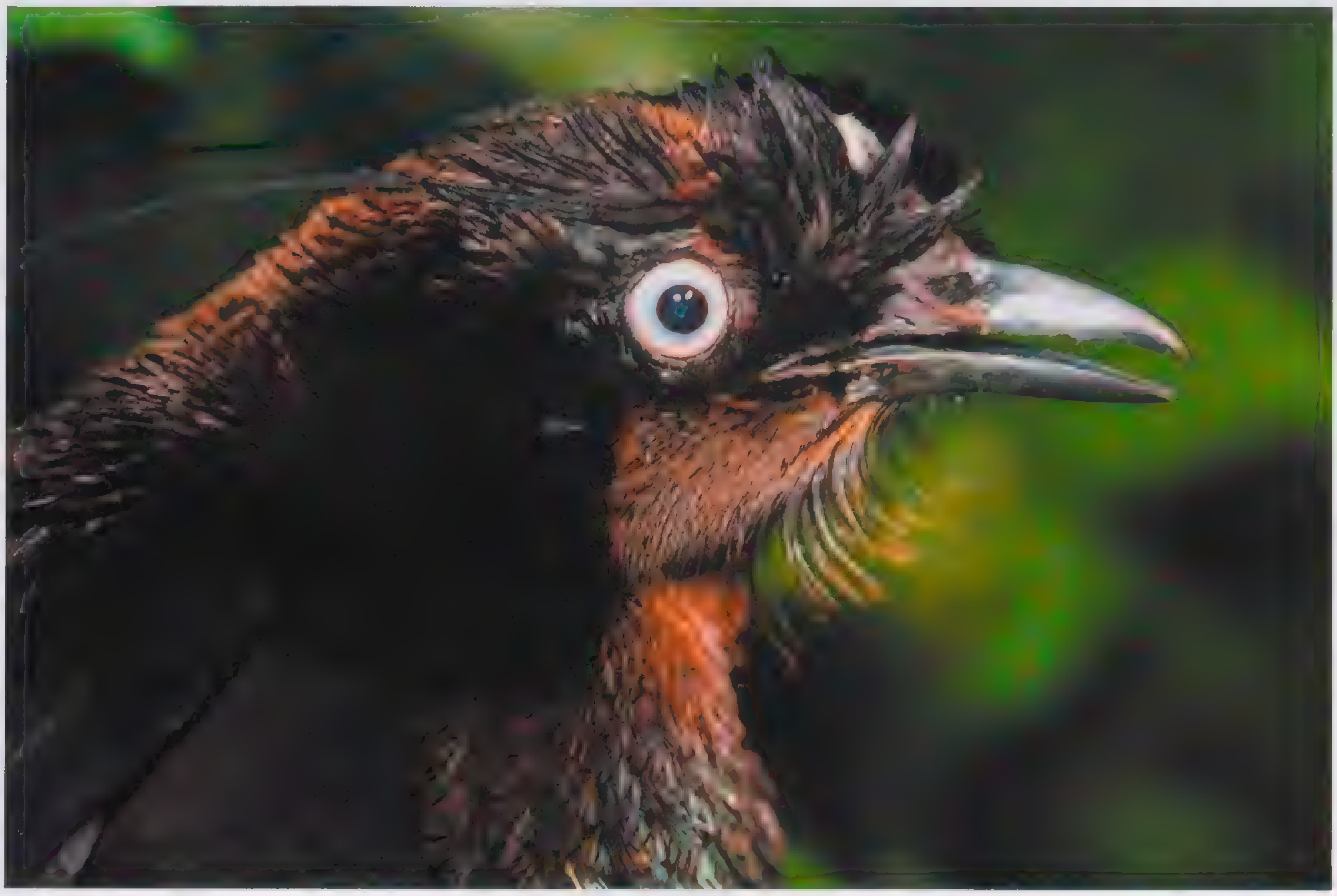
Close-up photographs of a female (above) and a male (below right) Berlepsch's Six-wired Bird-of-Paradise, held in the hand of a scientist. First described in 1897 by German ornithologist Otto Kleinschmidt, the species was "lost" for more than a century before being rediscovered by the author and the other researchers during the expedition to the Foja Mountains.

S. Dillon Ripley, all failed to pinpoint the homeland of these two lost treasures. The ornithologists were eager to find out where these two came from for one reason: the hope that additional unknown species might be lurking in the same forest that held the two species.

Professor Jared Diamond had been surveying isolated mountain ranges in New Guinea since 1964, when he and John Terborgh made a preliminary field trip to the eastern highlands of Papua New Guinea. After working in Papua New Guinea during the 1970s, Diamond began to focus on western New Guinea (then called Irian Jaya), which was much less studied. Because of their height, size, and physical isolation, the unsurveyed Foja Mountains were high on his list of survey targets. Diamond got a helicopter to drop him onto the gravel bar of a river in the Foja foothills in 1979. He struggled into the uplands and there came upon the lost bowerbird, which built its maypole bower on the mid-montane ridge crests above 1,000 meters.

Diamond arranged a second reconnaissance in 1981. This time he was able to hike up to 2,000 meters in altitude and survey much more of the avifauna. Looking for the "lost" bird-of-paradise, the only *Parotia* individuals he observed were females, which were not distinctive (*Parotia berlepschi* was described from the diagnostic male plumage).

I finally got my first glimpse of these mountains in 1987. Chartering a small Cessna from Jayapura, I conducted an overflight of the range on a crystal-clear day and saw what looked like a dry lakebed at about 1,500 meters near the range's western summit—a place where a helicopter could land. I now had a point of access to the heartland of this range, but we had 18 years of disappointments and delays before our Conservation International team finally received a letter of clearance to visit the Fojas from the Indonesian Institute of Science in the autumn of 2005.



STEPHEN RICHARDS

Above, author Bruce Beehler holds a female Berlepsch's Six-wired Bird-of-Paradise that he has just trapped in a mist net.

Conservation International's goal was to survey the birds, mammals, butterflies, plants, and herpetofauna (frogs, lizards, snakes) of the Foja Mountains, with a special focus on the habitats above 1,000 meters. But to do this we would need a helicopter, the only practical means of reaching the interior heartland of the uninhabited Fojas.

On the day we planned to go up the mountain, we were all up before dawn, packing tents, weighing baggage, and nervously listening for the sound of a helicopter coming in from the south. We hoped for an early departure, before the clouds began to build on the ridges.

We finally heard the unmistakable sound of rotor blades, which brought a shout to start moving cargo out to the airstrip. After refueling, the first group lifted off gingerly and headed northeastward, the pilot following the instructions of his handy GPS. Before long, however, the helicopter encountered vast pillowy clouds resting on every ridge top. We continued to climb gradually and probe the edges of the clouds. After about 20 minutes the pilot informed me on the headset that clouds were preventing him from getting closer than a half-mile from the lakebed. We began circling the area, looking for a break in the clouds. No luck. We flew toward the west summit and then circled back toward our proposed landing zone.

After scoping out other ridges in search of a fallback landing area, we looped back to the southeast and, *voilà,* the clouds parted just enough to allow us to drop rapidly to the landing zone. The pilot debated where to touch down. Was the grassy area firm or would the bare mud be better? He chose the bare earth, and the ground held as the pilot ever so gently reduced his rotor's lift. Within seconds, four of us clambered out of the noisy machine with the blades whirling above us, hunched over, clawing at the abundant baggage and lugging it to the grassy part of the lakebed just out of reach of the deadly blades. Four minutes later the machine lifted off and disappeared over the brow of the ridge. The sound receded, and the four of us stood stunned in a place we had wanted to visit for so long.

It was late morning, and the sun shone through the swirl of low clouds that hung on the high pass on the main spine of this isolated range. It was quiet except for a *Melidectes* honeyeater gurgling in the forest and a few other songbirds that I did not recognize. We stared about in wonder. After a moment of reverie, I decided we needed to prepare a proper landing ground. The lakebed was actually a sphagnum bog interlaced with tiny channels of flowing water. Some areas were waterlogged and treacherous, others were firm. After marking a safe landing zone with pink flagging tape, we started cutting our way into the adjacent forest to select a place for a campsite before the afternoon rains set in.

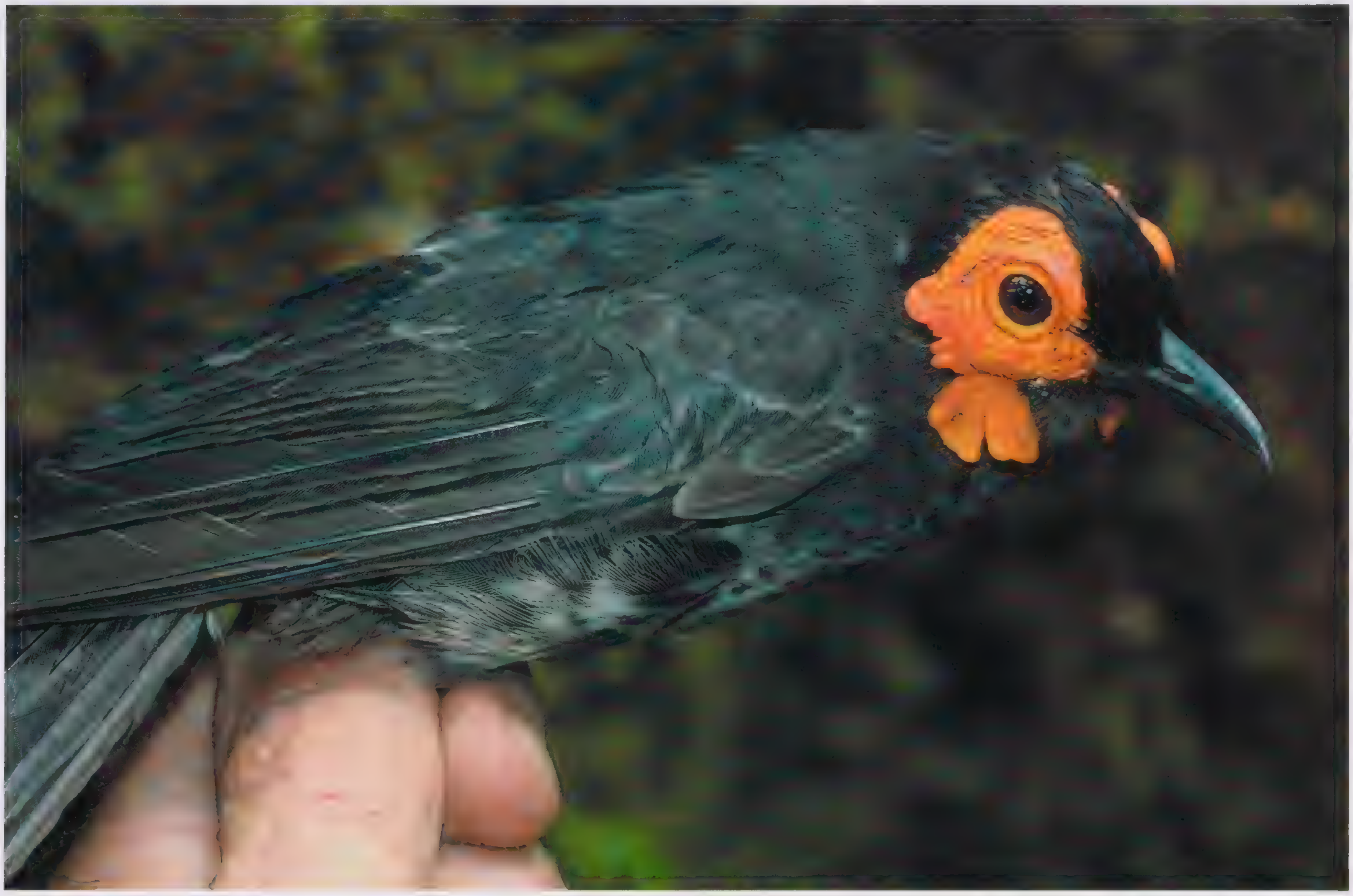
The chopper returned three more times at 40-minute intervals, each time disgorging people and masses of baggage and supplies. We had selected a flat knoll in the forest as a campsite, and men began clearing the area and selecting saplings as building timber. The fourth helicopter run was a close call. The clouds were closing in on our new forest as I watched the brave pilot punch through and deliver his precious cargo. The fateful fifth run was not to be. The weather ended all hopes of that. We had our entire crew of field workers—12 in all—but were missing 200 kilograms of necessary supplies.

We were nervously elated that we had surmounted the many hurdles and defied the odds to get into the Fojas. Within minutes, all of the scientists scattered into various corners of the bog and began their explorations. Kris Helgen followed the abundant trails in the grass, looking for wallabies. Wayne Takeuchi searched for flowering shrubs bordering the bog. Steve Richards listened intently for frogs calling from the grass and gullies. Brother Henk van Mastrigt eyed little white butterflies flying just out of reach. I craned my neck in search of birds moving along the forest edge.

When we all met for a late lunch, several of the party mentioned their encounters with a weird bird with dangling orange wattles. I initially thought they were describing a Wattled Ploughbill, which would have been a surprise in this north coastal range. But they noted that the bird in question also had a bright red face. I got mixed descriptions from the various informants, so I was confused but intrigued. This was a mystery bird that I needed to see. That afternoon, however, I went out to cut a transect trail. Reaching the top of the first ridge, I came upon a yard-high stick tower with a circular runway and scattered blue fruit—the bower of a Golden-fronted Bowerbird. In a thicket nearby I could hear a bird call that sounded like a truck dumping gravel—a male bowerbird. I sat down on a nearby log and waited a few minutes as the male came down to the bower and began tidying his playground. He arranged fruit on the runway, replaced a fallen twig, and gave an intermittent series of weird vocalizations interspersed with imitations of the songs of other forest birds.

The most exciting ornithological find of the entire expedition was the Wattled Smoky Honeyeater (below), an endemic of the Foja Mountains that was previously unknown to science. The last new species of bird described on the island of New Guinea had been the Snow Mountain Robin, discovered by Austin L. Rand in 1939.

BRUCE BEEHLER (2)



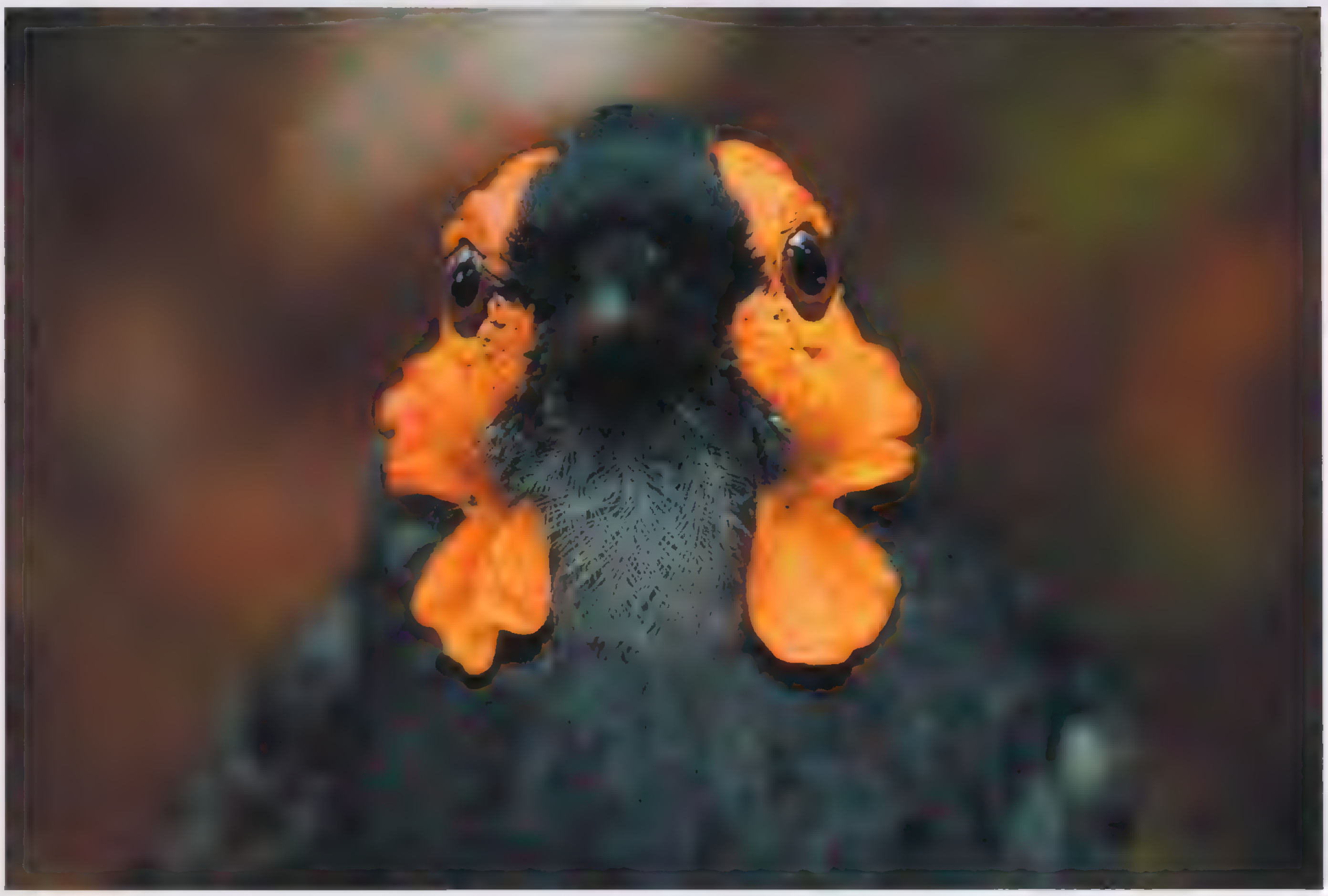
Hearing a rustle in the vegetation beside the bower, the male instantly snapped to attention. He mechanically picked up a small blue berry, held it in the tip of his beak, and posed stiffly, facing the stick tower. At that moment, a female (which is crestless) hopped down onto a horizontal branch adjacent to the bower. As she perched quietly, the male moved to the opposite side of the stick tower and posed with the fruit in his beak, all the while making crackling and rustling sounds. Then a rival male suddenly appeared, and before long a series of chases took place, back and forth through the bower and nearby vegetation as the two males played cat-and-mouse with each other. The female vanished, and the mating ritual failed to reach its intended consummation.

I was stunned to be sitting in the open, just a few yards away, watching all of this interplay. That afternoon I built a small blind from saplings. For several mornings, I sat there making observations. The territorial male seemed oblivious to my presence, and females and rival males came and went. The tameness of these birds was remarkable. It was as though some of the species in the Foja Mountains had absolutely no fear of humans—which is quite different from the birds in most parts of New Guinea, where chronic hunting has caused the wildlife to be extremely wary.

As we prepared a late lunch on our second day at the Bog Camp, an adult male and an attending female Berlepsch's Six-wired Bird-of-Paradise suddenly appeared at the edge of our camp, putting on a mesmerizing display. We stood in awe as the male noisily romped in the saplings around our entrance trail, flicking his wings and white flank plumes and whistling his sweet two-note song for the female. The male then dropped to the ground in the middle of the path, hopping to-and-fro and flashing his plumes at the nearby female.

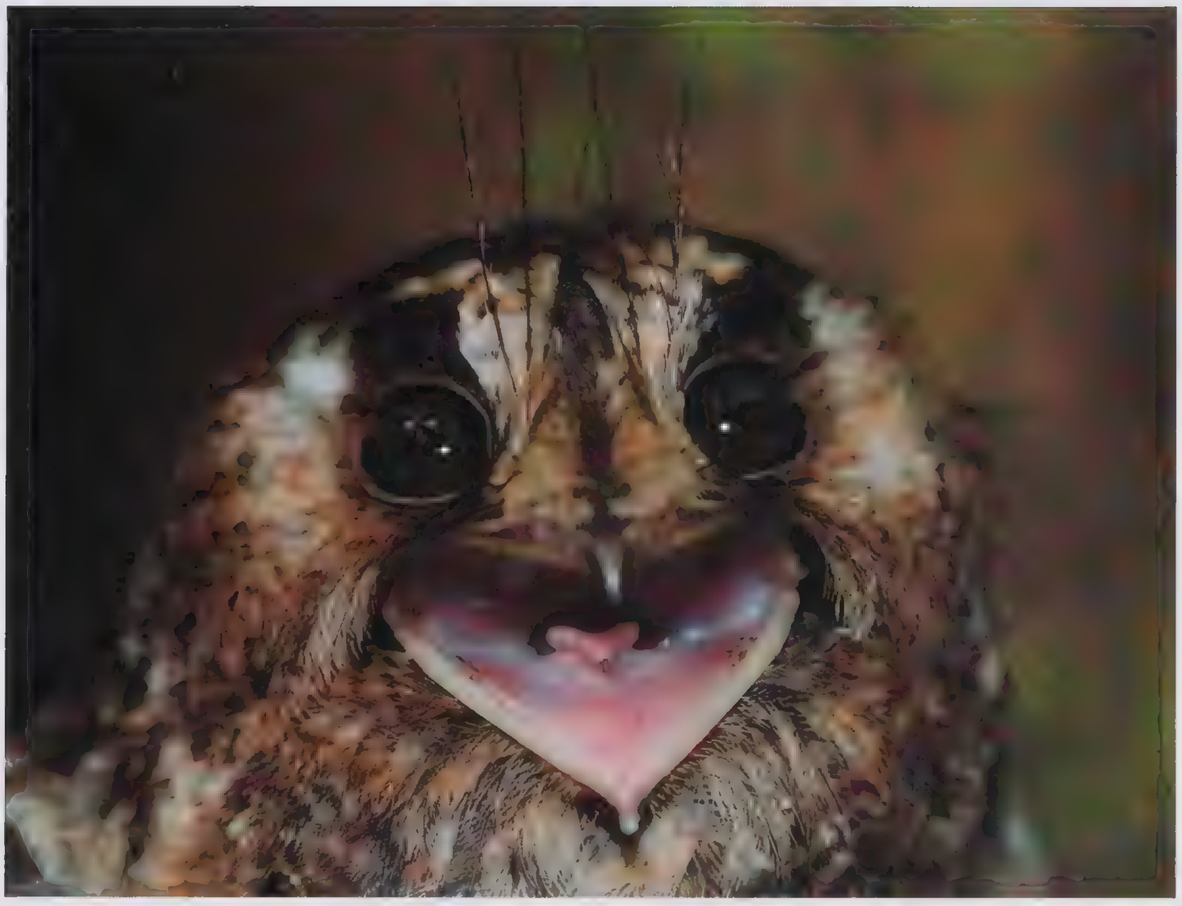
On subsequent days, this male would traipse through the canopy of the forest at the edge of the bog, singing and fidgeting, moving conspicuously as he announced his presence to the world. On the day before we departed, I was able to trace the male to his terrestrial dance ground in a thicket in the forest. Here was his secret love-site, where he would bring females for mating. Although I was never able to see that love interaction, I did see the male dance and prance and pose with a ball of moss on the branch above the dance floor. At one point, an immature male came and watched from the overhanging branch as the adult male did his routine on the ground.

Our various close encounters with this species answered two questions. First, this "lost" form did indeed inhabit the Foja Mountains. More than likely, the indigenous collectors had collected the bowerbird and the bird-of-paradise during the same foray into the forest back in the early 1890s. Second, we confirmed that the bird of paradise does indeed merit full species status. For many decades this very distinct form had been treated as a subspecies of another better-known species, probably because no western scientist had ever seen it in life. We thus have now added a "new" bird-of-paradise to the list even though it had first been described more than a century ago.



Above, the bottom of the patch on each side of a Wattled Smoky Honeyeater's face ends in a dangling wattle of skin the same color as its face—unlike any other honeyeater in New Guinea.

I didn't actually see the mysterious wattled bird until several days later, and when I finally did, I came to understand why my colleagues had been talking about something unlike anything they knew. This Foja Mountain oddity—the first bird our team encountered at the camp—was a species never before identified or named by western scientists. The last new full species described on the island of New Guinea had been the Snow Mountain Robin, which was discovered by Austin L. Rand



BRUCE BEEHLER (2)

*Above, the Mountain Owlet-Nightjar (*Aegotheles albertisi*) is a rarely seen but often heard nightbird of the upland forests of New Guinea. Below right, a Papuan Boobook (*Ninox theomacha*) is a common owl in the island's rainforests.*

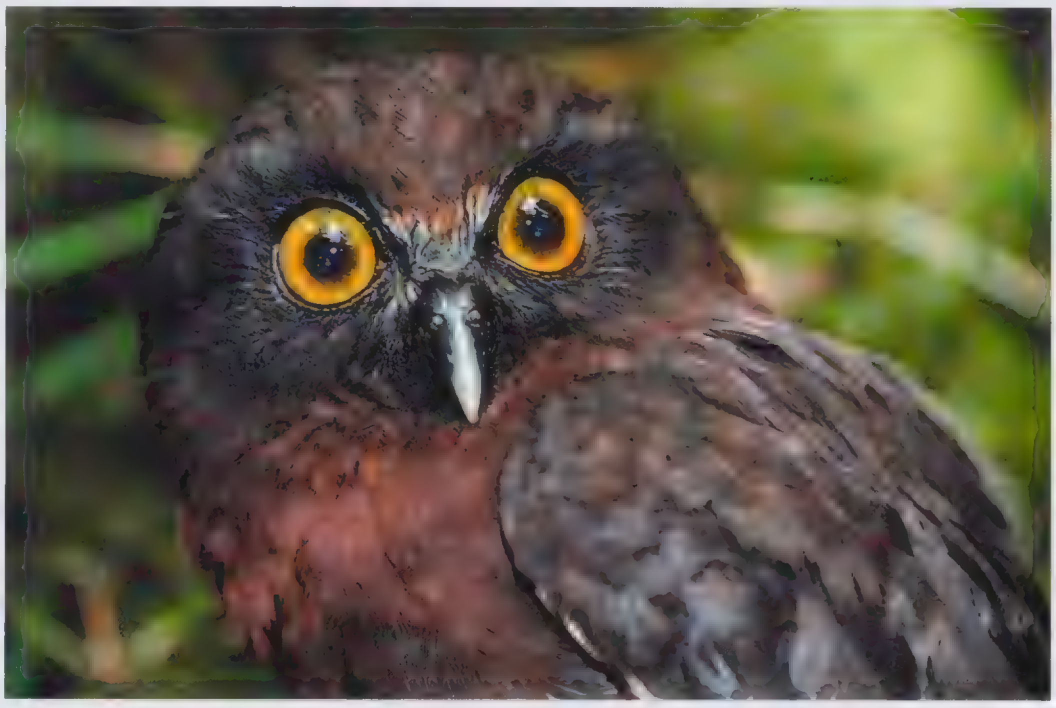
in September 1939, just before World War II broke out in Europe.

The new bird—the "Wattled Smoky Honeyeater"—is much like its more widespread cousin, the Common Smoky Honeyeater, with several major differences. This bird's bare face patch is red-orange, not orange-yellow. The face patch is larger and more irregularly shaped. Most amazingly, the bottom of the face patch on each side ends in a free-dangling wattle of skin the same color as the face, like no other honeyeater in all of New Guinea. We had found a new species! We netted five individuals, and I observed the species 15 times in the forest. The most peculiar thing about the bird was its absolute silence. I never heard one make a sound.

We later stood on the mountaintop with a group of six local landowners, including the two senior leaders from the Kwerba and Papasena tribes. Although they had never seen this site and had only penetrated the verges of this isolated range on hunting trips, they knew a great deal about the wildlife found there. Most of them were familiar with the Golden-fronted Bowerbird and the Six-wired Bird-of-Paradise, even though they had never before seen them and did not have the luxury of a field guide. They knew these creatures from the oral tradition, which still thrives in this corner of Papua. Ancestors who had spent time in the mountain interior had shared their knowledge with their offspring and grandchildren, and it had been passed along for generations. Hunters learned about the habits and behaviors of all the wildlife through stories told around a campfire at night. Rich and descriptive traditional stories were the main form of education for a people who live without television, video games, or electricity. The tribal elders were just as excited as we to encounter these creatures found only in the Foja Mountains. This was their patrimony. This was their main source of wealth. They treasured these forests.

The Foja Mountains are special because they are pristine, untouched. The island of New Guinea is cloaked in forest, but few of its forest tracts are unvisited by the traditional landowners. Even isolated mountain forests receive hunters regularly, which has a profound impact on the populations of larger mammals and birds. The Fojas are different. The human population is so small and scattered, confined to the edges of this vast world, that the core forest block is entirely free of human influence. In the two weeks we spent ranging out in all directions from the Bog Camp, our team of 12 researchers never encountered any evidence of humans, present or past. It was a wild land given over to wildlife—one of the few major forest tracts entirely protected by its isolation. It is now our mandate to work with the communities and local and national governments to ensure that this pristine wilderness remains a safe haven for the bowerbird and the bird-of-paradise and the bizarre wattled honeyeater for many years to come. ■

Bruce Beehler is vice-president of the Melanesia Program at Conservation International.



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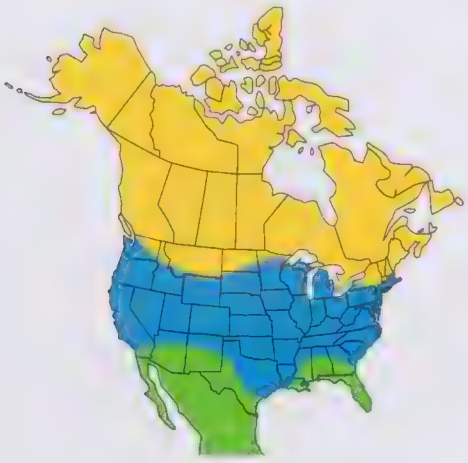

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SONS OF THE SEA

BY BRIAN SULLIVAN

Discovering the enigmatic world of pelagic birds

The very genus names given to pelagic birds show the sense of wonder and perhaps bewilderment felt by early ornithologists as they struggled to understand these remarkable deep-ocean wanderers—*Oceanites* (son of the sea), *Pterodroma* (winged runner), *Oceanodroma* (runs on water). How hard it must have been to believe that a bird as small and delicate as a Wilson's Storm-Petrel could spend most of its life on the open ocean, one of the most inhospitable environments in the world. Even more preposterous was the idea that it could endure one of the longest migrations of any bird, from its nesting

HAROLD STIVER

BRIAN PATTESON

Pelagic birds spend most of their lives in one of the harshest environments on Earth, the deep ocean, far from land. The small, delicate-looking Wilson's Storm-Petrel (left) travels thousands of miles annually, from nesting areas on Antarctic islands to the north Atlantic and back again. "Gadfly petrels," such as the Black-capped Petrel (above), are some of the rarest, most sought after birds in North America.

grounds in subterranean burrows on Antarctic islands through the north Atlantic and back again.

Seabirds are among the most enigmatic and poorly understood groups of birds in the world, and much remains to be learned about their ecology, natural history, and taxonomic relationships. Most of them nest on remote ocean islands, where they are largely nocturnal. They spend the rest of their lives on the open ocean and are rarely encountered by humans.

The same sense of wonder experienced by early ornithologists fills the memory of my first encounter with a Black-capped Petrel, a species that in one fast glimpse changed my impression of birds forever. After running our boat east for nearly two hours through the cool, green inshore waters off Cape Hatteras, North Carolina, we finally reached the western edge of the Gulf Stream. Here the water turns cobalt blue and its temperature rises to more than 80 degrees Fahrenheit. Along this convergence sealife abounds, and large congregations of seabirds exploit the abundant food. Cory's and Audubon's shearwaters and many Bridled and Sooty terns feed along the thick lines of sargassum that form along the temperature break. Still farther offshore the water is deeper, clear and warm, and the abundance and diversity of birdlife decrease because food becomes scarce away from the convergence zone. These deep offshore waters are home to the *Pterodroma* petrels. These species, the "gadfly petrels," are among the rarest and most sought-after birds in North America, and finding one or more of them was the reason we ventured offshore that day.

Forty-five minutes east of the break the sea was rolling, and sea-foam-green mountains of water periodically blocked out the horizon. Brian Patteson's voice crackled over the loudspeaker, "Black-capped Petrel coming toward the boat at nine o'clock!" I picked up a bird in the distance as it arced high above the water and then disappeared quickly into the troughs. In an instant it appeared again, exploding off the horizon in an incredible arc, taking it 50 feet into the air on sharply angled wings, twisting beyond vertical as it tilted sideways to gather all the force of the west wind. It turned at the apex of its second arc and briefly paralleled the boat, providing a long look before it disappeared into the wave tops off the bow. I was transfixed. I had already been birding for several years, but I clearly recall standing with my mouth agape as the bird passed by the boat. I'd never seen anything like it—eye-to-eye with a bird that vividly defined the terms elegance, grace, speed, and power.

The Black-capped Petrel also redefined the term "wild" for me, and in an instant the ocean became my new wilderness. I felt like I'd just seen something from another planet. And in a way I had, because the open ocean is an alien planet to most humans.

I have been lucky enough to see several hundred Black-capped Petrels since that day, but my first encounter with the species changed my life profoundly—the moment I saw it I knew that I would work with birds.

Called *Diablotin* ("little devil") in Hispaniola, and *Las Brujas* ("the witches") in Cuba, primarily because of the eerie nocturnal vocalizations heard at its nesting colonies, the Black-capped Petrel faces both rapidly degrading habitat where it nests in Hispaniola and poor governments with limited resources to protect them. This species' historic nesting range in the mountains of Haiti is all but gone, and in the Dominican Republic it clings on in only a few small colonies in the mountains. Black-capped Petrels may also breed in the highlands of eastern Cuba, where researchers occasionally report seeing them, but we have no definitive evidence yet.

HAROLD STIVER

BRIAN PATTESON

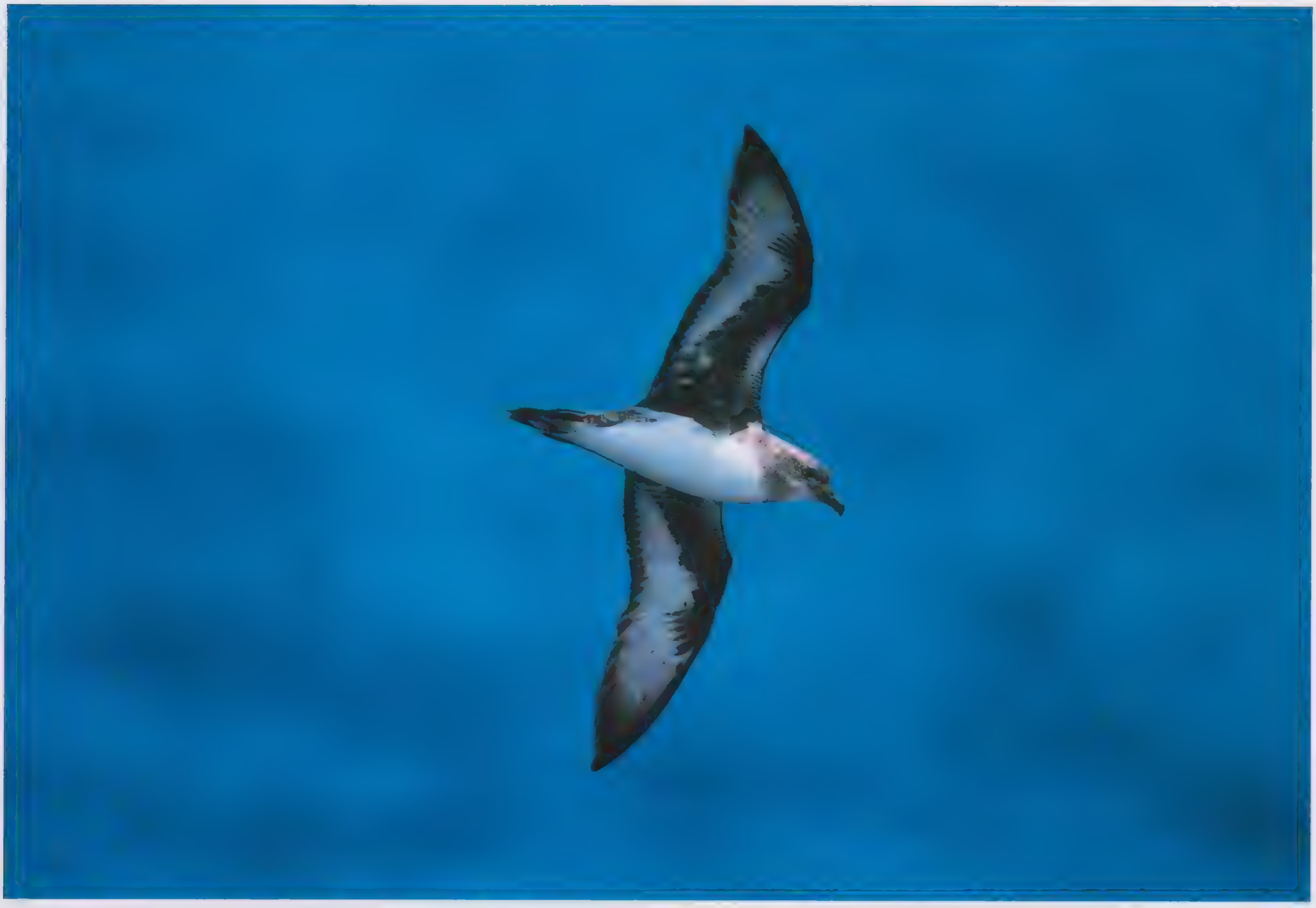
The Greater Shearwater (left) is another austral migrant, moving north to exploit the rich waters off Atlantic Canada during the southern winter.

Cory's Shearwaters (above) have slower and less frequent wingbeats than most shearwaters. They breed in the eastern Atlantic and Mediterranean but regularly summer off the East Coast of North America.

In the 1970s and 1980s, the Black-capped Petrel was considered a vagrant to North America, but thanks in large part to the dedication of birders participating in organized pelagic trips, it is now known to occur regularly from May through September in Gulf Stream waters north to Cape Hatteras, North Carolina.

Many seabirds are among the most rare and threatened birds in the world. Some have already become extinct, such as the Jamaican Petrel and the Guadalupe Storm-Petrel (I hope to be proven wrong about these two species), whereas others that had been presumed extinct have recently reappeared after not being seen for centuries. The Bermuda Petrel, or "Cahow," is one such bird. Exploited by early

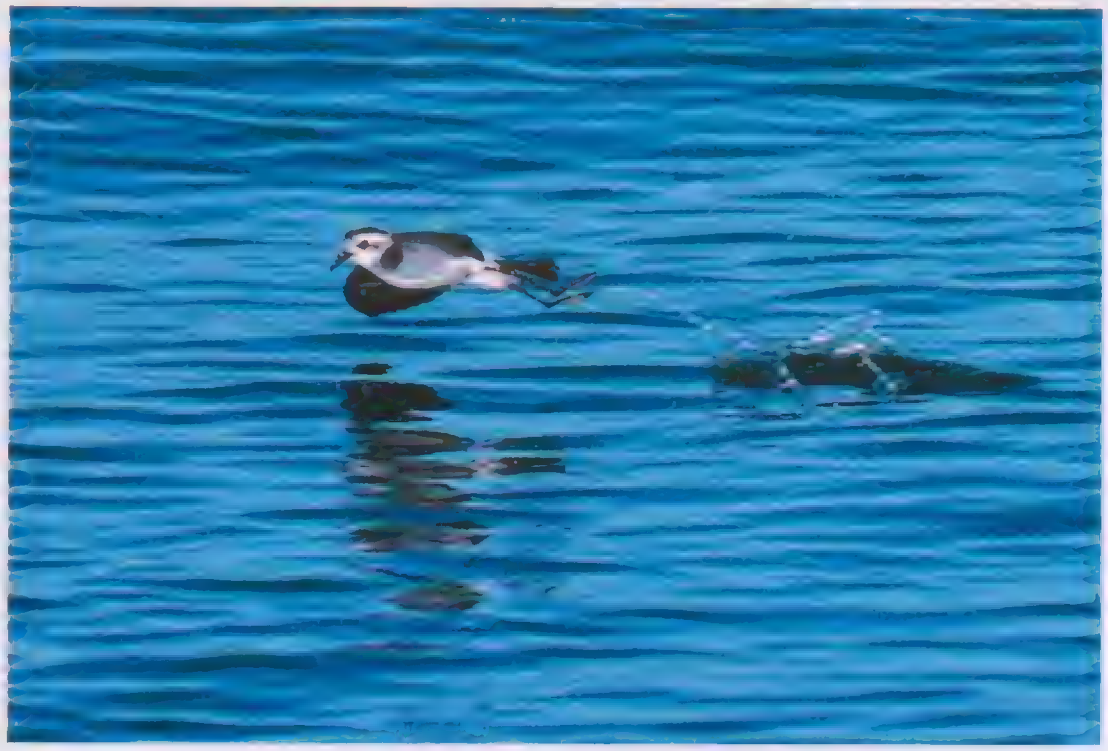
BRIAN PATTESON (2)



Like other gadfly petrels, the Herald Petrel (above) is a fast, elegant flier. Its taxonomy is still a matter of debate, with some authorities considering the Atlantic breeders a distinct species. The White-faced Storm Petrel (at right) bounces in pogo-stick fashion across the waves to pick up plankton and tiny fish.

explorers for food and later preyed upon by a host of introduced predators, the Bermuda Petrel was presumed extinct by the 1620s. After a 300-year absence, this species was found breeding on small islets off Bermuda. Thanks to the work of David Wingate and the Bermuda Petrel Conservation Program, there are now about 50 breeding pairs. First recorded in North America in 1996, the species is now seen nearly annually in the warm Gulf Stream waters off Cape Hatteras, North Carolina.

Because of their unique ecological requirements, seabirds face a myriad of threats. Many species evolved in isolation on offshore islands, free from terrestrial predators, allowing them to nest safely in underground burrows by day, avoiding most avian predators by entering and leaving their burrows in darkness. The arrival of humans and their associated suite of nonnative predators to these breeding islands has been catastrophic for seabird populations, not to mention the island fauna in general. Predation levels are high on islands now occupied by feral cats and rats, which take both adults and chicks as prey because they have evolved little defense against these alien predators. Recognizing these grave threats, many governments have initiated feral animal eradication programs designed to return these islands to their natural state. Unfortunately,



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The continental population of White Pelicans was considered threatened until the early 1960s by combinations of changing water levels, human disturbance, and possibly contaminants. The population has since recovered and continues to increase at a rate greater than 3% per year.

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White Pelican by William Newton/CLO

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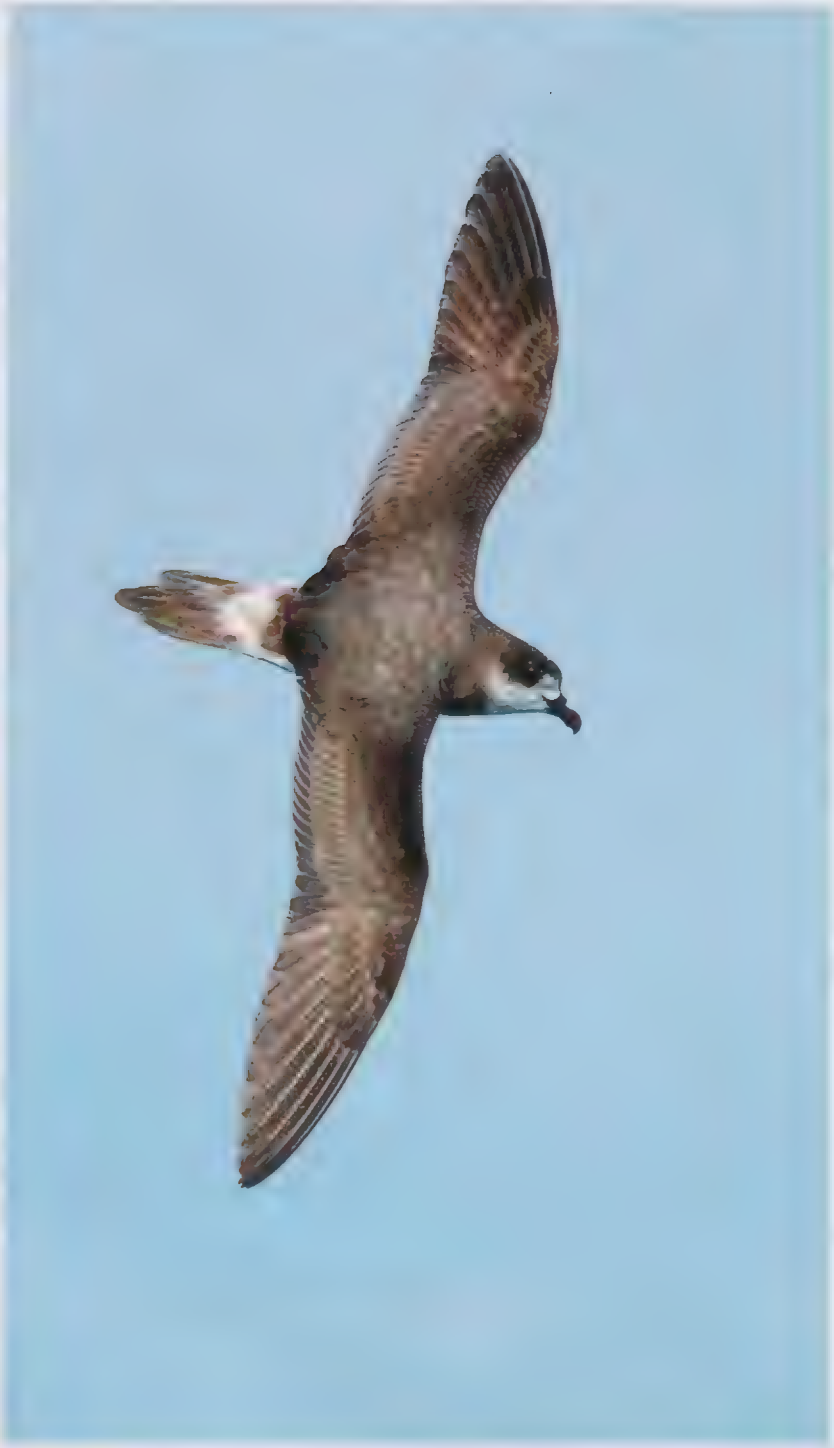

The Bermuda Petrel or "Cahow" had been considered extinct since the 1600s, but a small population was discovered breeding on small islets off Bermuda.

BRIAN PATTESON

some seabirds are still being killed by humans for food, but in many areas the take is now regulated. At sea, floating plastics, ingested and subsequently regurgitated as food to the young in the nest, as well as incidental take in the long-line fishery, have severely affected seabird populations. But fortunately seabirds have shown a remarkable capacity to recover despite these human-caused problems, largely because they are long-lived—many species live for decades—and because they stay on the open ocean for long periods.

Although some pelagic species, such as the Sooty Shearwater, are abundant, many species are much sought-after by North American birders. Simply getting offshore is a major task for some people, and the combination of difficult identifications, fleeting views, and a rolling sea can provide a memorable birding experience to say the least. Nevertheless, the occurrence of many of these species off North America would be largely unknown if not for the efforts of birders and organized pelagic birding trips. Pelagic birding is without question the final frontier of birding in North America, and more new species have been added to the continent's list of birds in this realm than in any other. In the past year alone, several North American firsts have been found off California, and the pelagic waters off North Carolina continue to yield astonishing results.

Tour operators run pelagic trips from both coasts of North America and in other places around the world. Among the best-known pelagic tour operators are Brian Patteson, specializing in trips out of North Carolina <www.patteson.com>, and Debra Shearwater, running trips out of central and northern California <www.shearwaterjourneys.com>. Starting in May off North Carolina and in August off California, boat trips are available nearly every weekend in these locations, which offer the highest diversity and numbers of pelagic species. These two companies offer expertise and experience hard to match elsewhere. If you'd like to see pelagic birds, I recommend taking an organized pelagic trip, because the information and identification help provided by the leaders is invaluable for first-timers at sea. So plan on taking a trip offshore soon and spending some time in the last great wilderness of North America. ■

Brian Sullivan is project co-leader of eBird at the Cornell Lab of Ornithology.

BIRDING JOURNAL #379

I CAN'T FULLY EXPRESS MY PASSION FOR RAPTORS.

Coming back home to the Catskill Mountains for a long weekend between our tour dates gave me time to exercise my own wings and do a little exploring on the property with Nikon's newest DigiScope system. Susan and I are on the road so much during the year traveling with our raptor exhibit it's rewarding to get back to nature and experience these birds in their true element. Having spent most of my life up close and personal with raptors in my care, I'm especially thrilled to be able to get such highly detailed digital images of birds enjoying their privacy in the wild.

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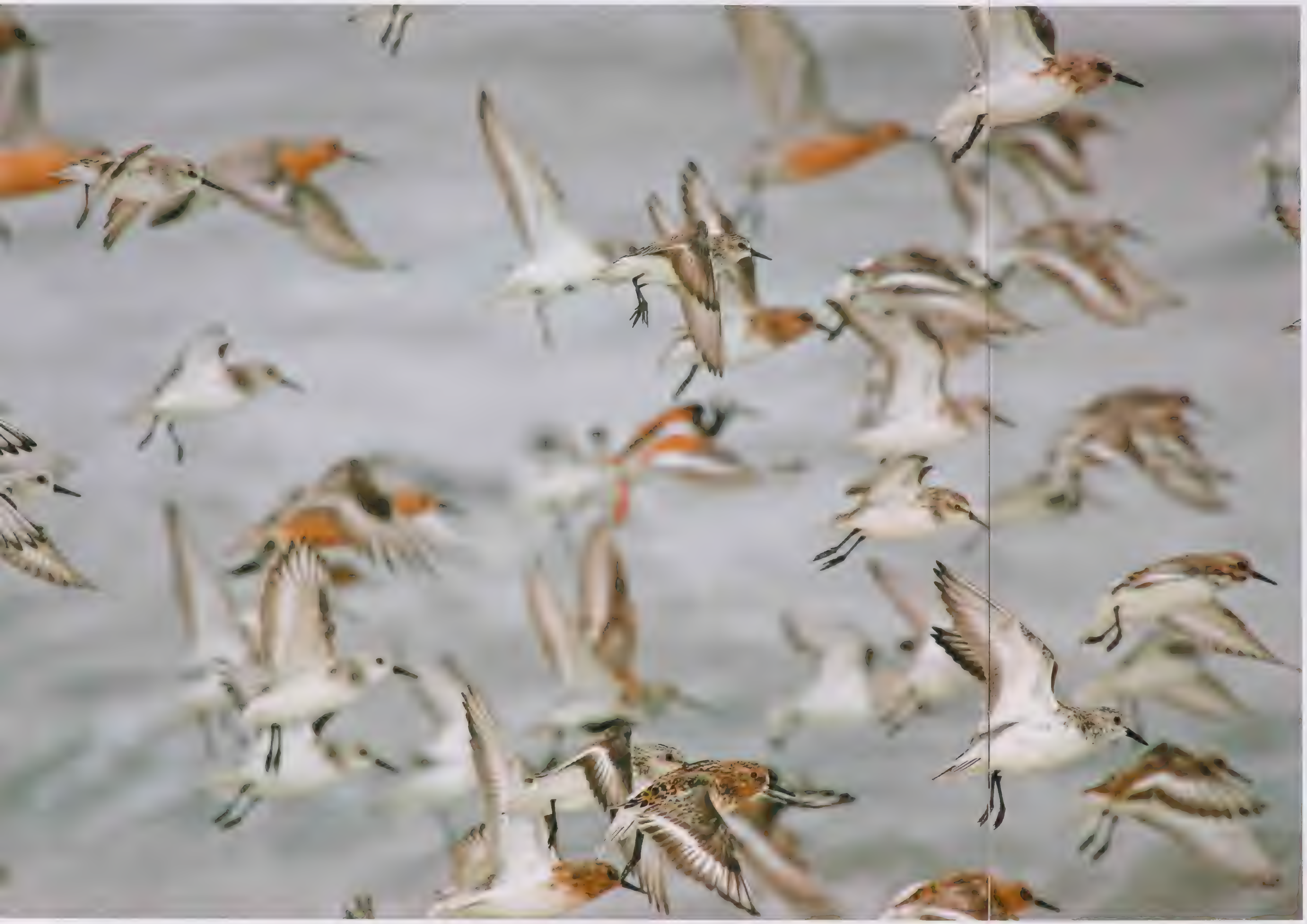
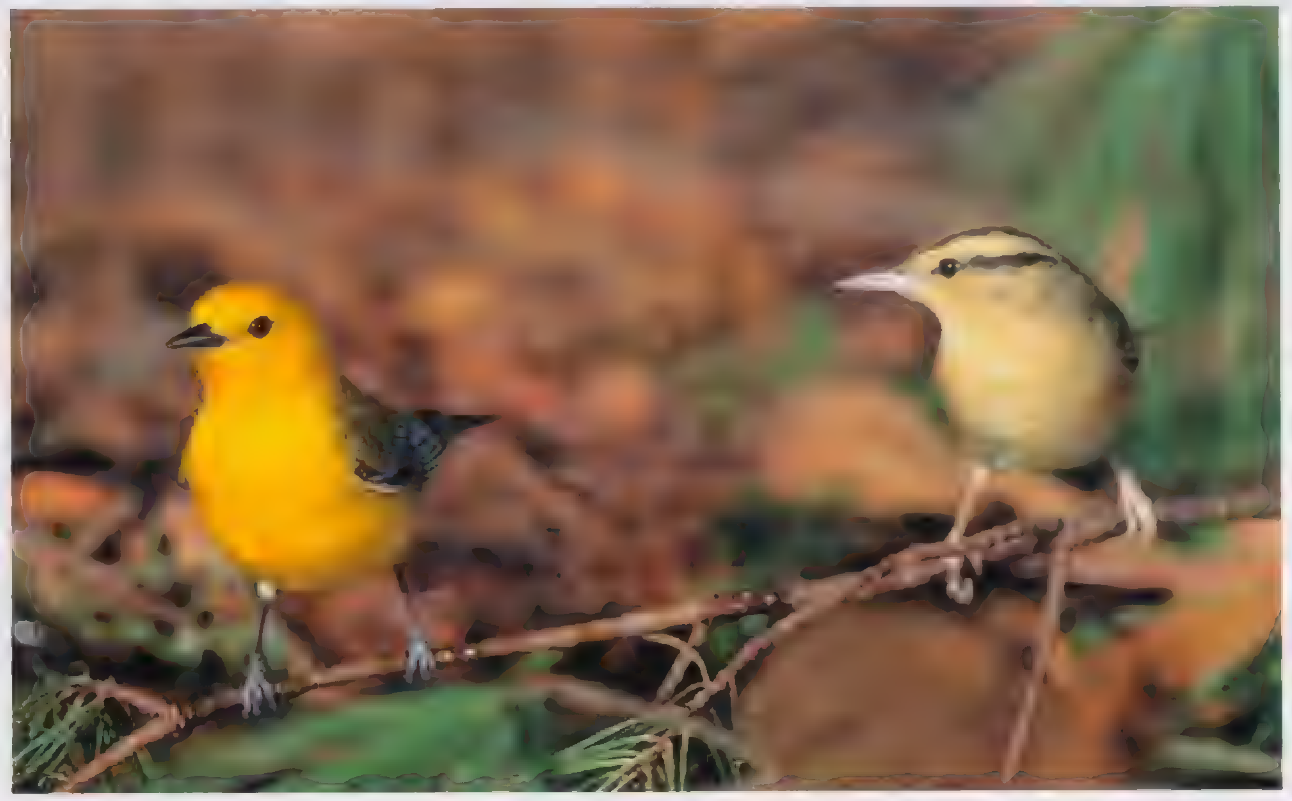


Text and Photographs by Kevin Karlson

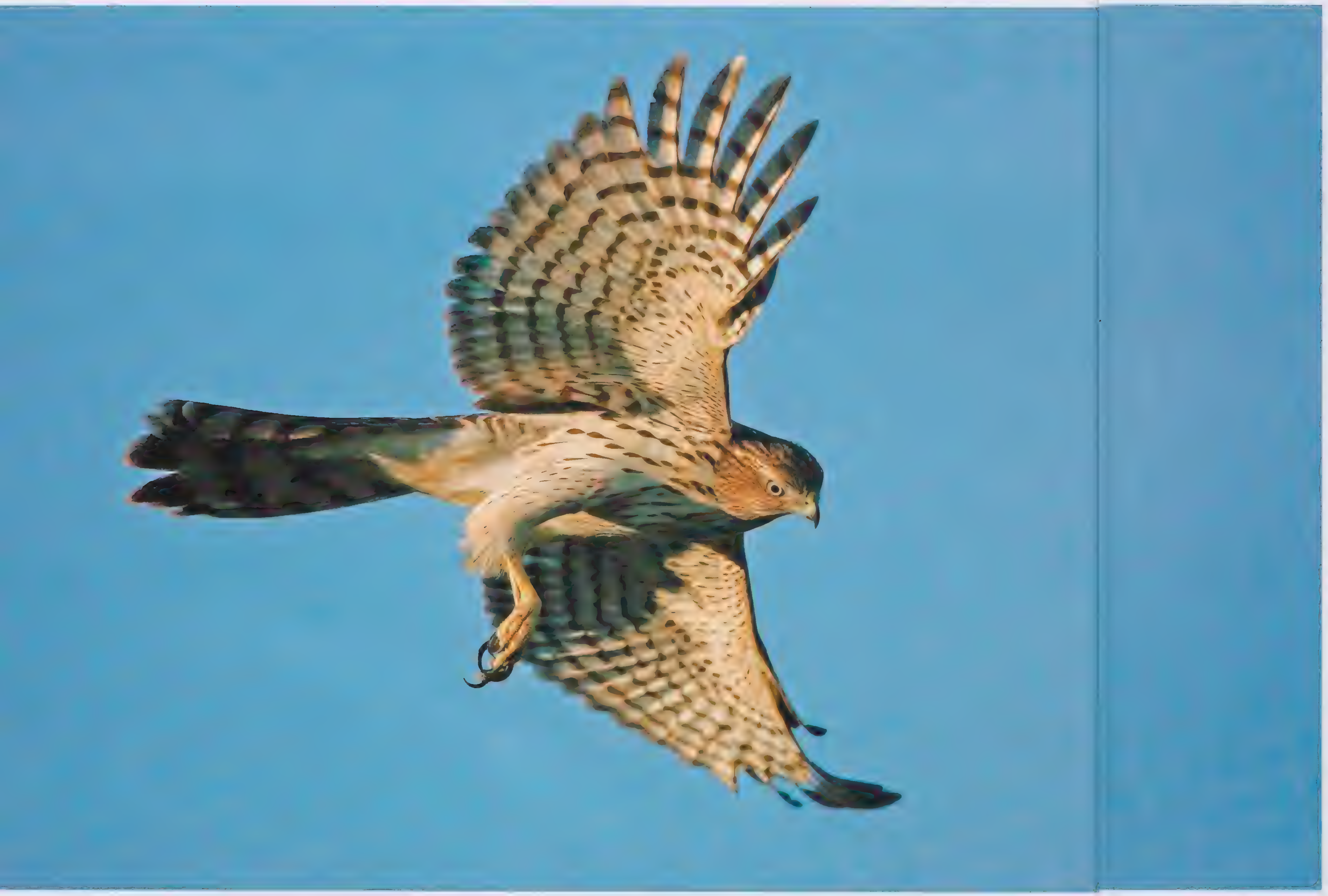
A simpler method for field identification

Isn't it always the one that got away that generates the most excitement in any field sport? After the object of your search has deftly disappeared after a few teasing seconds, all sorts of "what ifs" and "darn its" quickly set in. Among birders, discussions of what really appeared in that moment occasionally rage for a long time (for example, the recent Ivory-billed Woodpecker sightings in Arkansas).

Conventional field-identification techniques—which rely on a carefully applied analytical approach to gathering information on a wild bird—are not well suited for determining the species in a quick sighting. Although a small number of dedicated birders eventually become proficient enough to identify birds under difficult sighting conditions, it takes years of in-depth study and field experience. Most of us just don't have enough time to dedicate that kind of effort to birding, and we prefer a more casual, easy-



A mixed flock of shorebirds flashes past you on the beach. How can you possibly identify the species seen in a split-second glimpse? By noting your impressions of size, general coloration, and shape. Practicing with mixed-species flocks of flying birds will greatly improve your skills. At right, the color of a Prothonotary Warbler (left) as well as its more evenly proportioned body quickly distinguish it from a Worm-eating Warbler.



Notice the overall shape of this juvenile Cooper's Hawk. The broad-based, somewhat round-tipped wings that extend perpendicular to the body in a glide, with a large head protruding past an imaginary line connecting the wrists, quickly distinguish this accipiter from the similar Sharp-shinned Hawk. A long, rounded tail completes the picture.

going approach. In the past, this has limited how far most birders can progress with their identification skills, but changes are brewing that may soon change this situation.

A simpler and surprisingly effective approach to field identification has been evolving in the birding community, with exciting results taking place across North America. I call this approach "birding by impression," because it relies on being able to recognize quickly the unchanging physical features of a bird along with important behavioral and geographic variables to make a near-instant identification.

Until recently, becoming proficient at bird identification required you to develop a working knowledge of ornithological terms and feather details, but impression-based birding relies more on common sense, keenness of observation, and the ability to think in a nontraditional way. It is not intended to replace conventional identification techniques or to reduce the value of the important work accomplished by previous authors and field birders. Birding by impression is a simple, easy-to-use set of concepts that will enable birders of all levels to enhance their field skills. It has increased my own proficiency in bird identification and renewed my interest in studying every bird I see with different eyes.

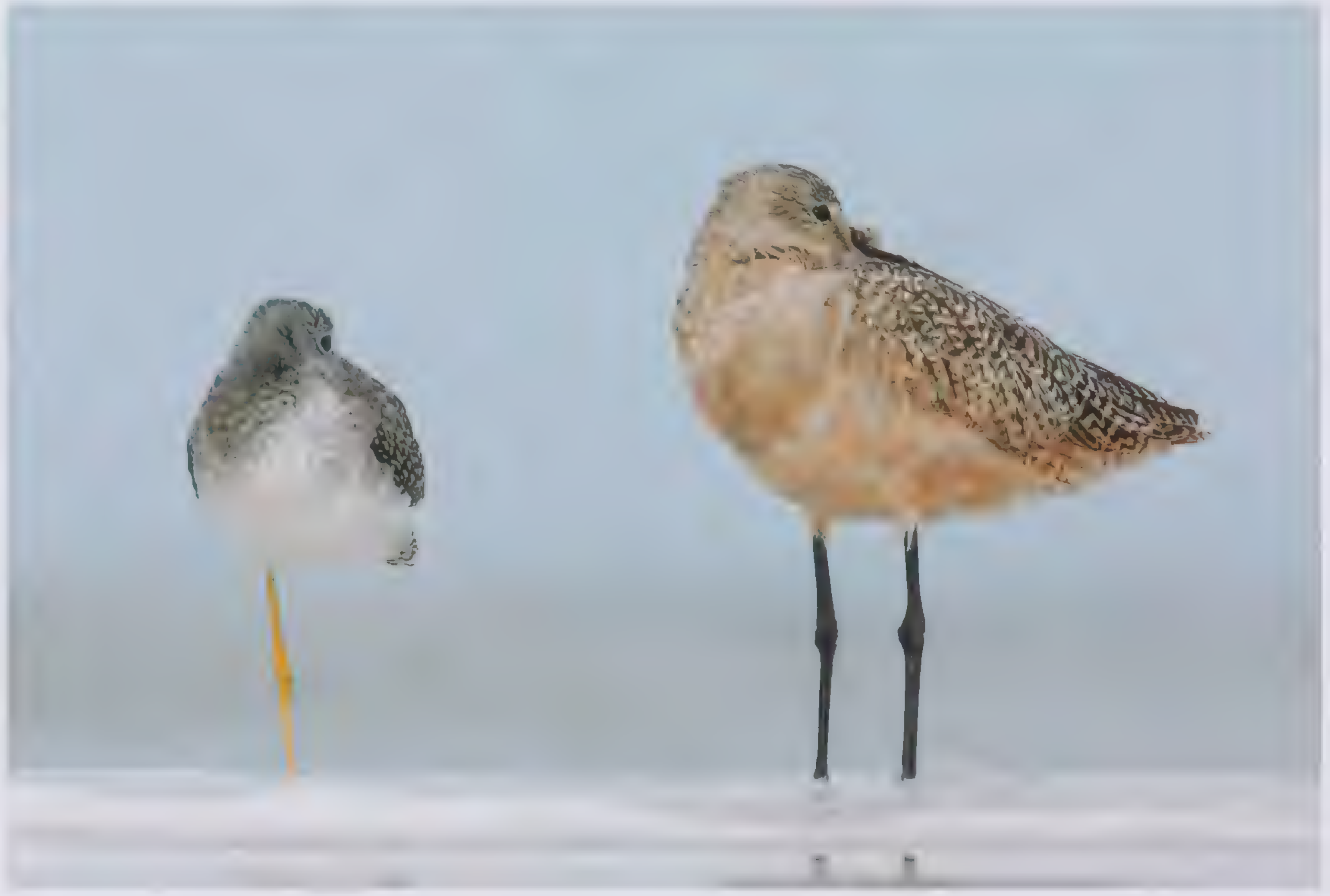
It's exciting to speak with other accomplished birders who have had similar experiences using an impression-based approach. The fact that birders across the country have developed a similar approach independently is no doubt a reflection of its validity, but very little has been written about birding by impression.

When I'm presenting bird identification workshops, I often ask participants to describe how they are able to recognize friends and relatives in a crowd. Most of them say they can pick out familiar people by the way they walk or by their size and body language. One woman told me she could recognize her son, a long-distance runner, even at a great distance, by his distinctive stride. No one ever says they recognize people because of the size of their noses or the length of their arms. They almost always base their identification on overall impressions of their friends and relatives that they have developed subconsciously over time. They now recognize them instantly without having to think about or analyze who they are. This is the same basic principle used in birding by impression.

At a recent talk, a man who had served in the military during World War II told me that the techniques I use to recognize certain bird species quickly were very similar to the wartime training he had received. Navy psychologists realized long ago that by exposing pilots to rapid, repetitive visual images of various aircraft they might encounter, "after images" of the planes would form in their subconscious. He told me they often didn't have time to think about the type of plane speeding toward them but were able to recognize instantly its overall shape and dimensions from the impressions they had stored in their brains. (The Navy acronym for this was WEFT—Wings, Engine, Fuselage, and Tail.)

So more than 60 years ago, in World War II, a quick identification system based on impressions was considered superior to consciously analyzing an aircraft sighting. The same is true today with bird identification. If you make an effort to recognize and store in your mind the unchanging field impressions of size, overall shape, and movement styles of a variety of birds, you will vastly boost your effectiveness as a birder.

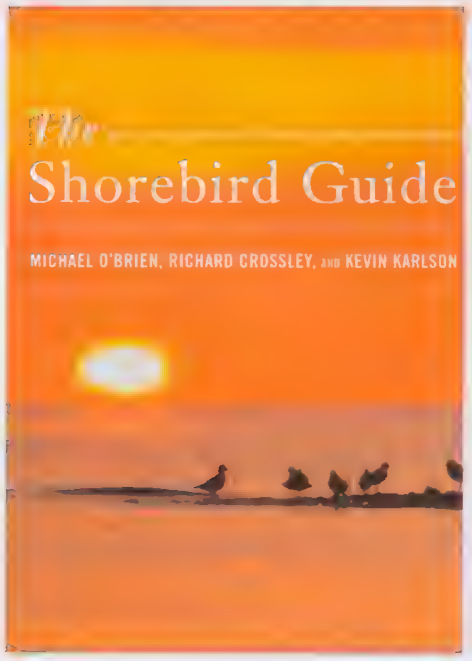
Before continuing, I should mention that I spent many years birding before I began using these techniques. I have been a serious field birder for 28 years, and I make my living primarily as a bird photographer, author, and photojournalist. I was a member of the New Jersey Bird Records Committee for 12 years, and I have spent many years studying the identification of North American birds, both in the field and through the available literature. For my first 25 years of birding, I took a conventional approach to field identification and had a good deal of success. My peers considered me proficient as a birder, but I personally felt that my field skills had stalled for about 10 years. I was resigned to being a very good but not great birder. This changed unexpectedly about three years ago, when I was working on a new book, *The Shorebird Guide* (Houghton Mifflin, 2006). My coauthors Michael O'Brien and Richard Crossley gave me an ultimatum: either change the concept of the book to focus on impres-



At right, the size difference, overall plumage appearance, and leg color make it easy to distinguish a Greater Yellowlegs (left) from a Marbled Godwit, even when their heads are tucked in.

ARTHUR MORRIS/BIRDS AS ART

No other American bird forages like a Black Skimmer, flying low over the water with its lower mandible submerged to catch fish. Kevin Karlson's new book, The Shorebird Guide, *coauthored by Michael O'Brien and Richard Crossley, takes an impression-based approach to identifying birds.*



sion-based identification or they would not be interested in continuing the project.

At first I was angry. What they said implied that the field techniques I'd honed for years were less effective than this seemingly oversimplified approach. Although I still had reservations, I finally agreed to be a guinea pig and give this unproven approach a chance. Looking back, I now realize that the hardest part of learning how to apply this simple field discipline was to unlearn my old habits and embrace a conceptually different mindset in my birding.

I didn't have an immediate breakthrough but began seeing definite results about six months into my experiment. I started noticing subtle features in overall shapes of common birds and observing fine structural details that I had not seen in 25 years of birding. I concentrated on the most obvious physical characteristics—size and structure—of every bird I saw, regardless of the location or whether or not I was using binoculars. I stored this information in my mind and added more details every time I saw these birds.

Before long, I was quickly identifying familiar species as they flew past, before my analytical mind had time to process the details. The most striking example of my personal success occurred while I was leading a group of birders at Bolivar Flats, Texas, in April 2005.

Out of the corner of my eye, I spotted a brownish, medium-sized, short-billed, long-winged bird flying quickly past. Someone immediately called out "golden-plover." Imagine my surprise when I realized the voice was my own. I had identified and called out the correct name of a rapidly moving, sideways-glanced shorebird, without consciously analyzing all of its field marks. The group was openly impressed by my quick call, but what amazed me even more was my speed and my almost unconscious identification of this previously troublesome bird in flight.

How was I able to make this call without consciously analyzing the bird's field marks? By correctly determining that the bird's overall size and shape fit a large plover and that the uniform brownish color of its upperparts, especially the rump, eliminated Black-bellied Plover. The geographic location ruled out Mountain Plover.

I am still intrigued by the speed with which my mind processed all of this information and how I called out the identification without being concerned about making an incorrect identification. I knew instantly that birding by impression had significantly improved my skills. I understand that this discipline is not foolproof and mistakes will occasionally occur, but I feel that the benefits greatly outweigh the negatives. After all, everyone makes mistakes, and they should be regarded as opportunities to learn, not as a reflection of shortcomings.

Birding by impression stresses learning the basics of a bird's relative size, structure, behavior, habitat use, general coloration, and voice. These field characters are far less variable than plumage details, so they create a more reliable starting point for initial field identification. You can easily identify many birds solely by applying these concepts. Although determining the identification between some extremely similar species may require you to analyze the bird's plumage and structure more fully, such cases are actually rare.

The beauty and effectiveness of this approach lies in its simplicity. You don't need to know the fine points of feather anatomy or have prior experience with birds. Because field descriptions involve unchanging parts of a bird's anatomy, combined with other straightforward variables, birders of all skill levels can immediately engage in a common-sense dialogue about the bird in question. They can save the endless discussions of plumage variations for a later time, after the species has been identified.

Once you adopt it, this simpler technique will eventually become second nature, part of your unconscious thought process. You should start by forming detailed impressions of the birds in your own backyard, particularly when they're flying, and use these as benchmarks for sizing and comparing with unfamiliar birds.

Even if I tried, I could not go back to studying birds solely using my old conventional identification approach. It is difficult to improve on the increased accuracy and the sense of personal accomplishment you get using an impression-based approach.

Birding by impression works best if you note several basic field characters. Don't base your identification on just one concept—use all of your impressions to come to a fast, accurate conclusion. Don't be discouraged if you don't see immediate results. Practice is the key to success in all disciplines. I've given a number of workshops using this discipline at various national birding festivals during the past two years and have had an enthusiastic response from birders of all levels, especially beginners.

Here is a list of basic impressions you should follow. The first two, size and shape, are the most important to determine right away, and the rest can follow in random order.

SIZE. This is definitely the most important feature. You can estimate size by comparing the unknown bird with familiar birds nearby or even with an inanimate object such as a soda can or discarded shoe. If you don't see anything nearby, ask yourself: Is it as large as a robin? As small as a sparrow? A close size estimate eliminates many possible choices. (Recently one non-birder reporter compared a Semipalmated Sandpiper's size to a stick of butter when I asked her how big it was.)

SHAPE AND STRUCTURE. These closely related terms are vital to your initial identification impression. For our purposes, shape represents overall body configuration (for example, fat and dumpy versus slender and tapered), whereas structure includes individual features such as bill shape and length, leg length, and wing-to-tail comparisons. Try to look at each bird with an artist's eye, and mentally sketch its outline. After a while, your descriptions will become concise and standardized. Instead of using sometimes confusing ornithological terms, your impression might include the descriptions "fat and dumpy with a short stubby bill" or "slim and tapered with medium-length, dark legs." With practice, these first two impressions often narrow your choices to several, or even one, species.

BEHAVIOR. The manner in which a bird feeds, flies, walks, or reacts to danger may help you to establish its identity. Note a bird's movements over time or its manner of flight and form a

A Piping Plover sits with her three-day-old chicks. The kind of habitat where a bird lives can help you identify it. The Piping Plovers that nest along the Atlantic are virtually never found away from a coastline. The ones nesting in the interior are only found inland during breeding season, beside the edges of rivers and lakes. They spend the rest of the year on the coast.

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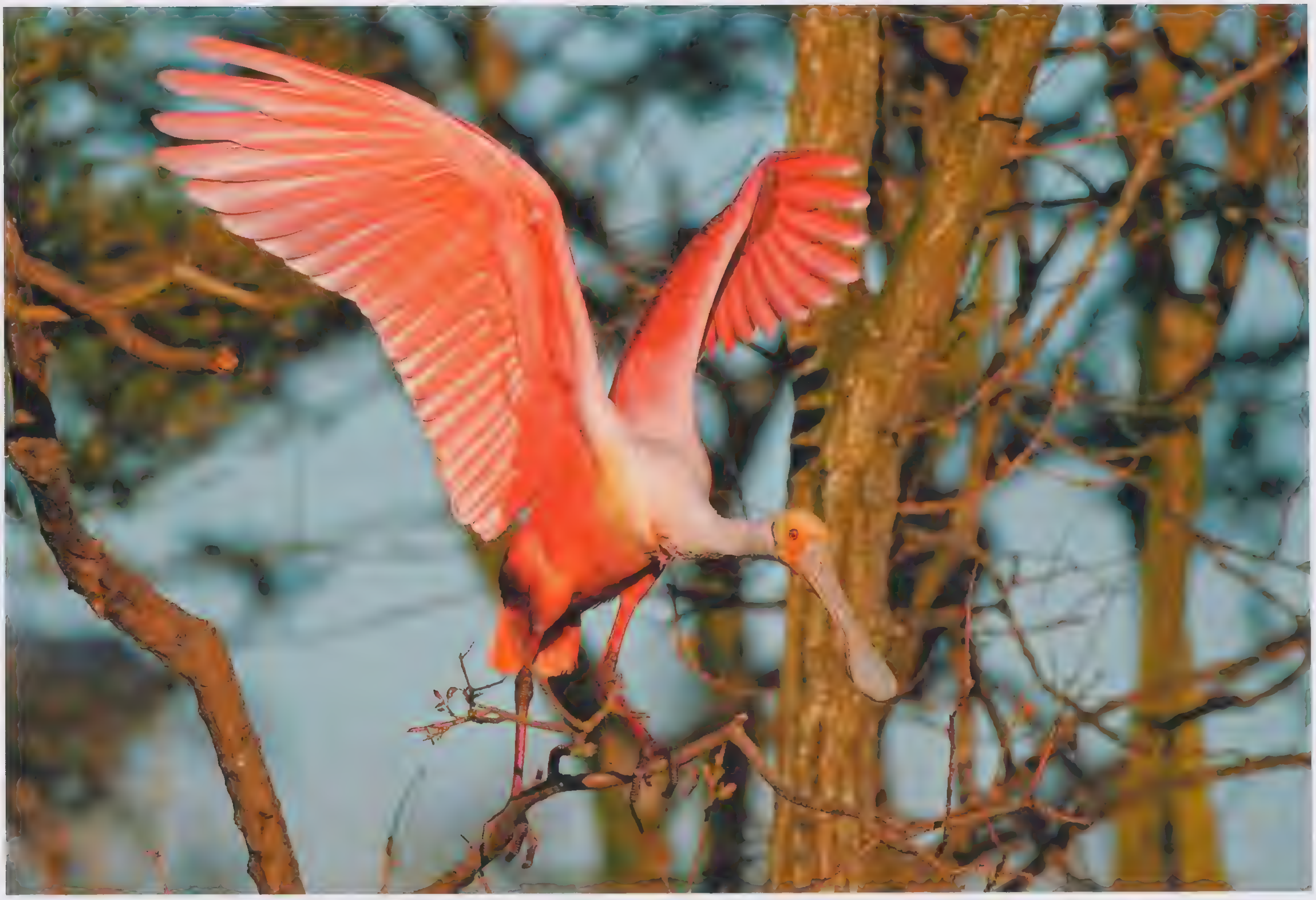


For some birds such as the flashy Roseate Spoonbill (above), overall color is almost enough to seal its identification. The unique spatula shape of a Roseate's bill, combined with its bright, pinkish-red body color and large size, rules out a flamingo.

picture of its typical behavior. For example, does a shorebird feed in a sewing-machine fashion by probing in one location, or does it move constantly while picking at the surface? Does a raptor fly straight from wood line to wood line, or does it fly over open spaces with periodic buoyant movements?

Sometimes a particular behavior is not helpful, especially if a bird is out of place during migration. Many birds—such as Dunlins, Red Knots, starlings, blackbirds, grackles, and White Pelicans—are usually seen in large flocks outside the breeding season. This can be helpful to know if you see distant flocks.

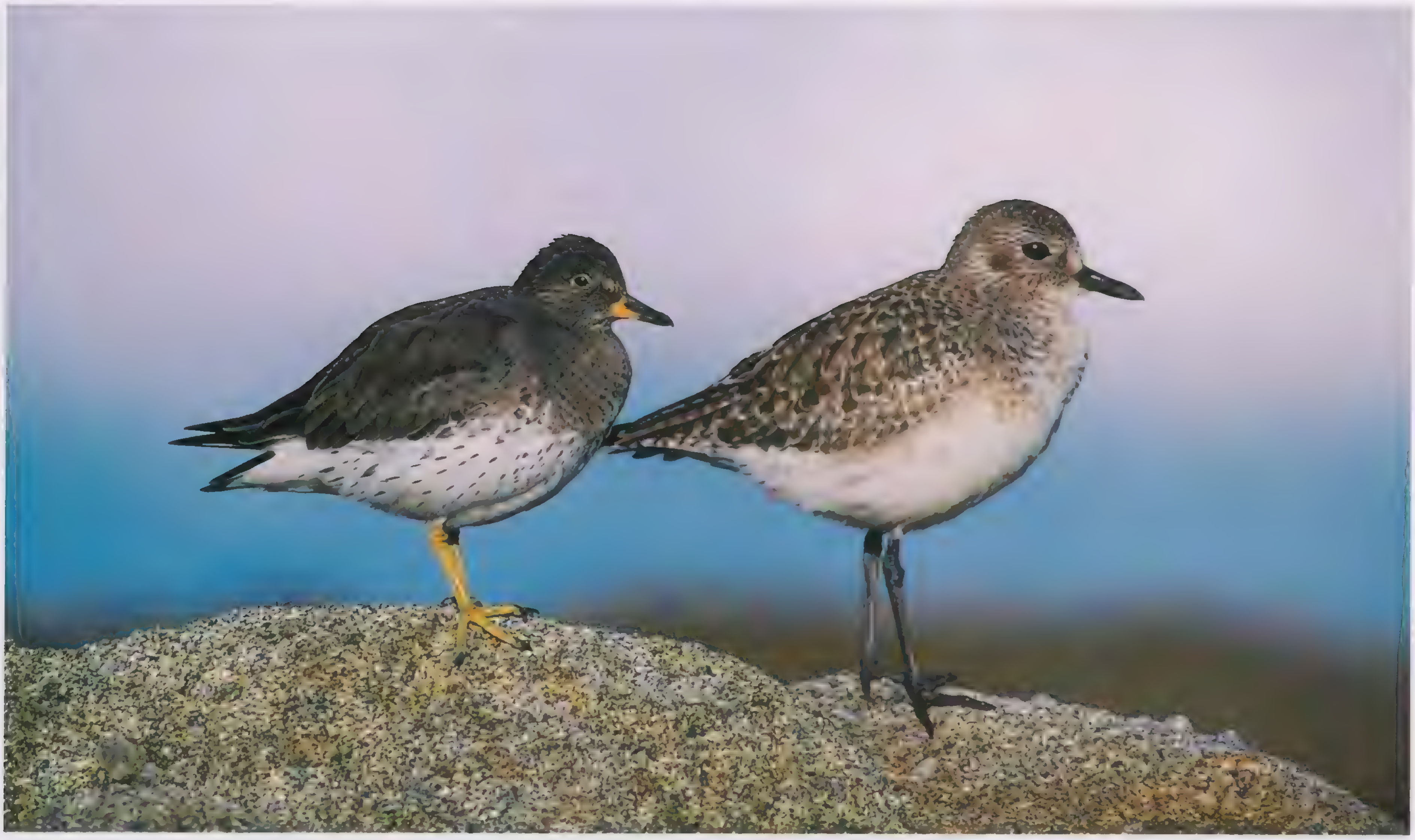
HABITAT. The habitat where a bird resides or forages may help you to identify it. Some birds are rarely found away from certain habitats. We see Sanderlings along open beachfronts, Reddish Egrets in saltwater or brackish coastal areas, and Pine and Cape May warblers feeding in coniferous trees. Note the habitat a bird is using and add it to your overall impressions. But remember that migrating birds are sometimes forced to use uncharacteristic habitats.

OVERALL COLORATION. The general coloration of a bird should be an important part of your first impression. Instead of analyzing individual feathers, note the overall color or combination of colors and their location on the bird's body.

VOCALIZATIONS. The songs or calls of a bird, particularly in flight, are often diagnostic by themselves. When in doubt, jot down your best description of a call note or song and compare it with possible choices in a field guide. It is difficult to remember these vocalizations later, so try to write down your impressions in the field at the time you hear them.

COMPARISONS WITH NEARBY BIRDS. This is the ace in the hole of birding by impression. I cannot overemphasize its importance in the identification process. Is the bill short or medium length? Are the legs long or short or in between? Is the body bulky and front heavy or slender and evenly proportioned? You'll be able to answer such questions when you compare the unknown bird directly with nearby birds. When you are trying to separate very similar species, such as Long-billed and Short-billed dowitchers, direct field comparison is the best way to learn subtle differences in shape, structure, and plumage.

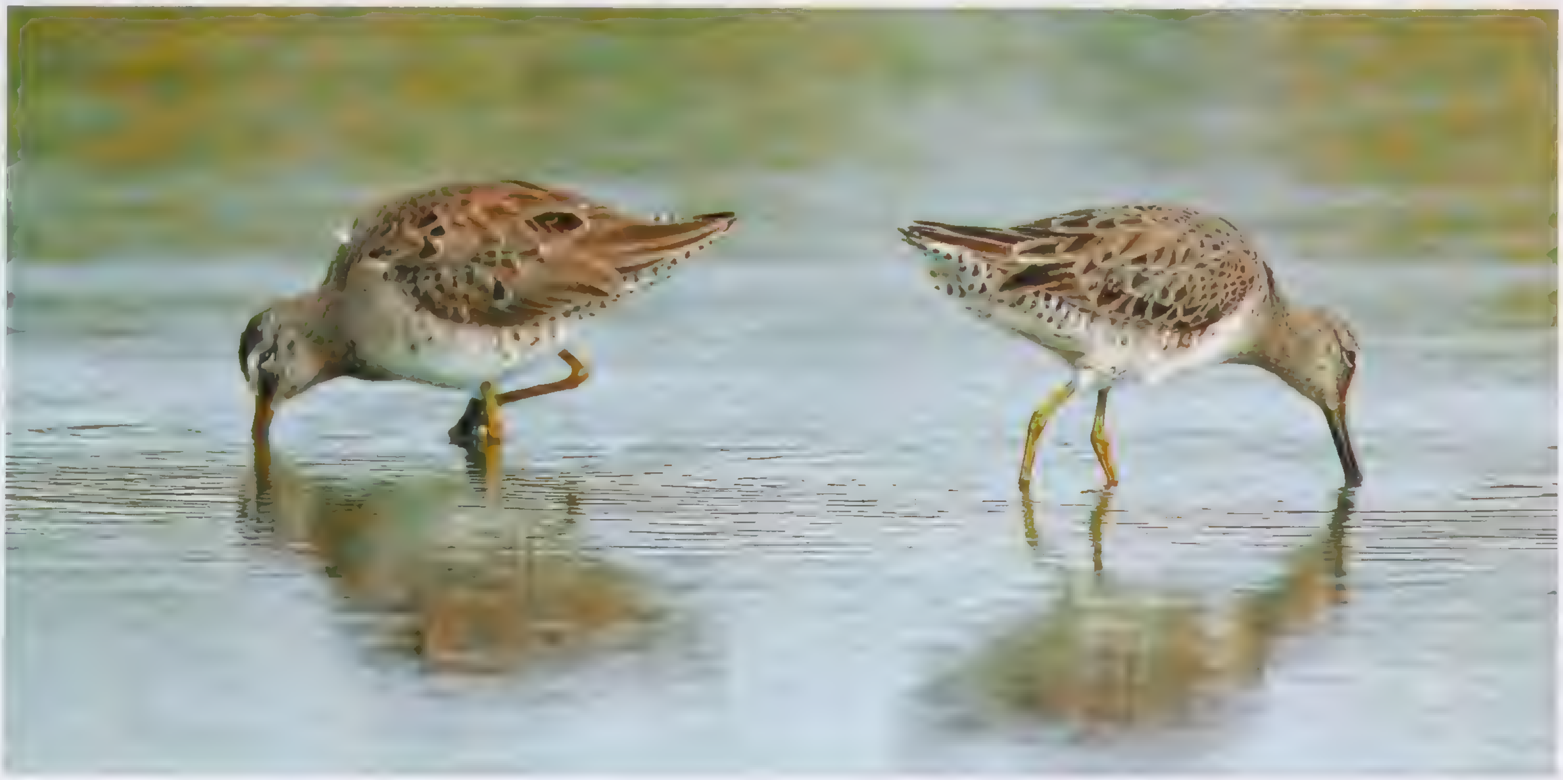
ARTHUR MORRIS/BIRDS AS ART



After forming your initial impressions, consult field guides or use conventional plumage and field-mark approaches to fine-tune your conclusion. Feather analysis, molt timing, and other technical identification tools are useful for determining the age and sex of certain birds and to solidify identifications between similar species. But if you just want to know what you are looking at, impression-based identification is usually sufficient.

The best part of this technique is that it's fun. It's also easy to learn and apply, and your field skills will increase greatly over time. Practice is the key, but you can practice almost anywhere you go, even without binoculars. For every bird you see, add a little more information to your personal mental database. You will not feel intimidated in the company of experts, because your field skills will also be quick and accurate, your descriptive language simple and direct. So go out and have fun using this approach, wherever you happen to be, because that is what birding is all about. ■

Kevin Karlson is an author and wildlife photographer based in Cape May, New Jersey.



Above, identifying birds with similar size and shape, such as the Surfbird (left) and the Black-bellied Plover, requires attention to detail. The plover's longer, dark legs, puffier head shape with large eye, and longer, all-dark bill are distinctive. The Surfbird's body is also slightly smaller and more compact. At right, for birds with similar plumage, such as Long-billed (left) and Short-billed dowitchers, a side-by-side structural comparison is useful. The long-billed has a thicker neck, a bulkier chest, and a noticeable hump-backed look.

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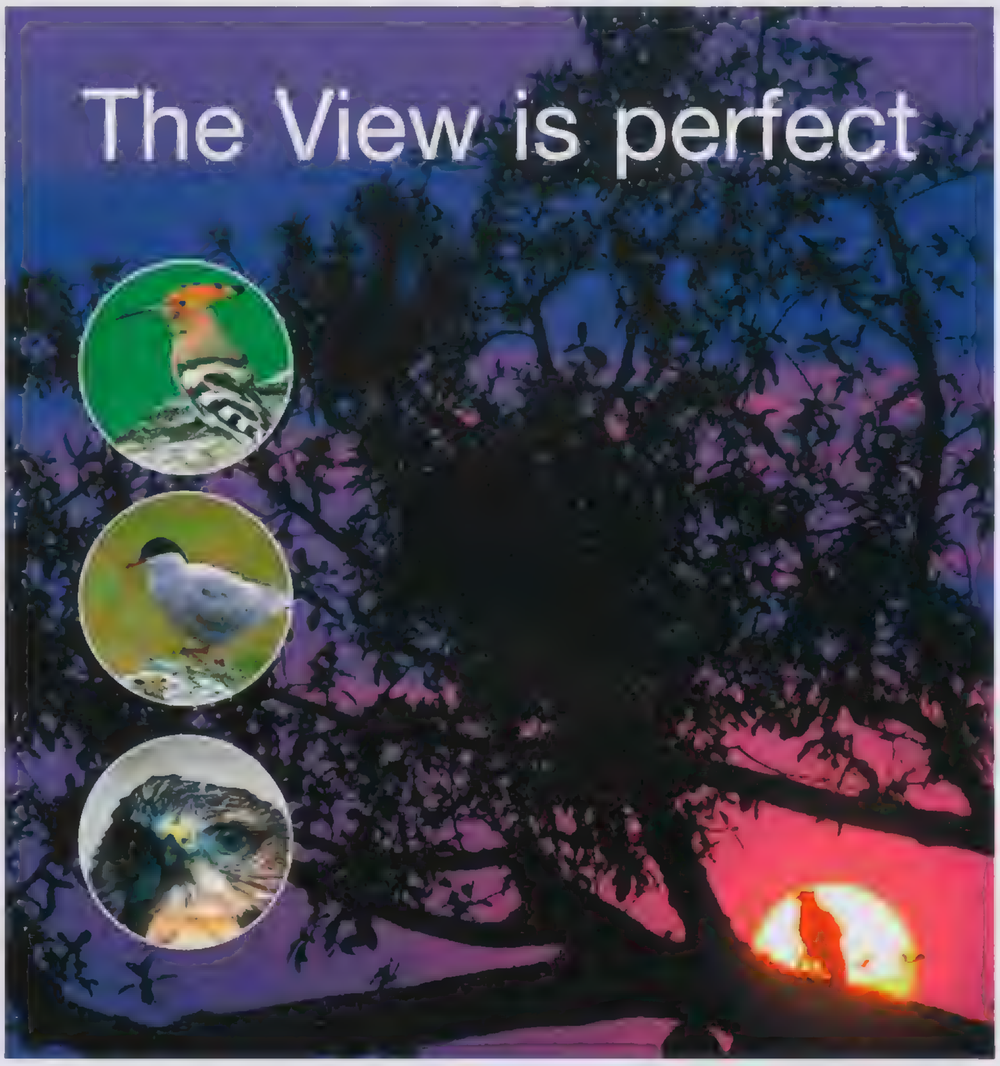

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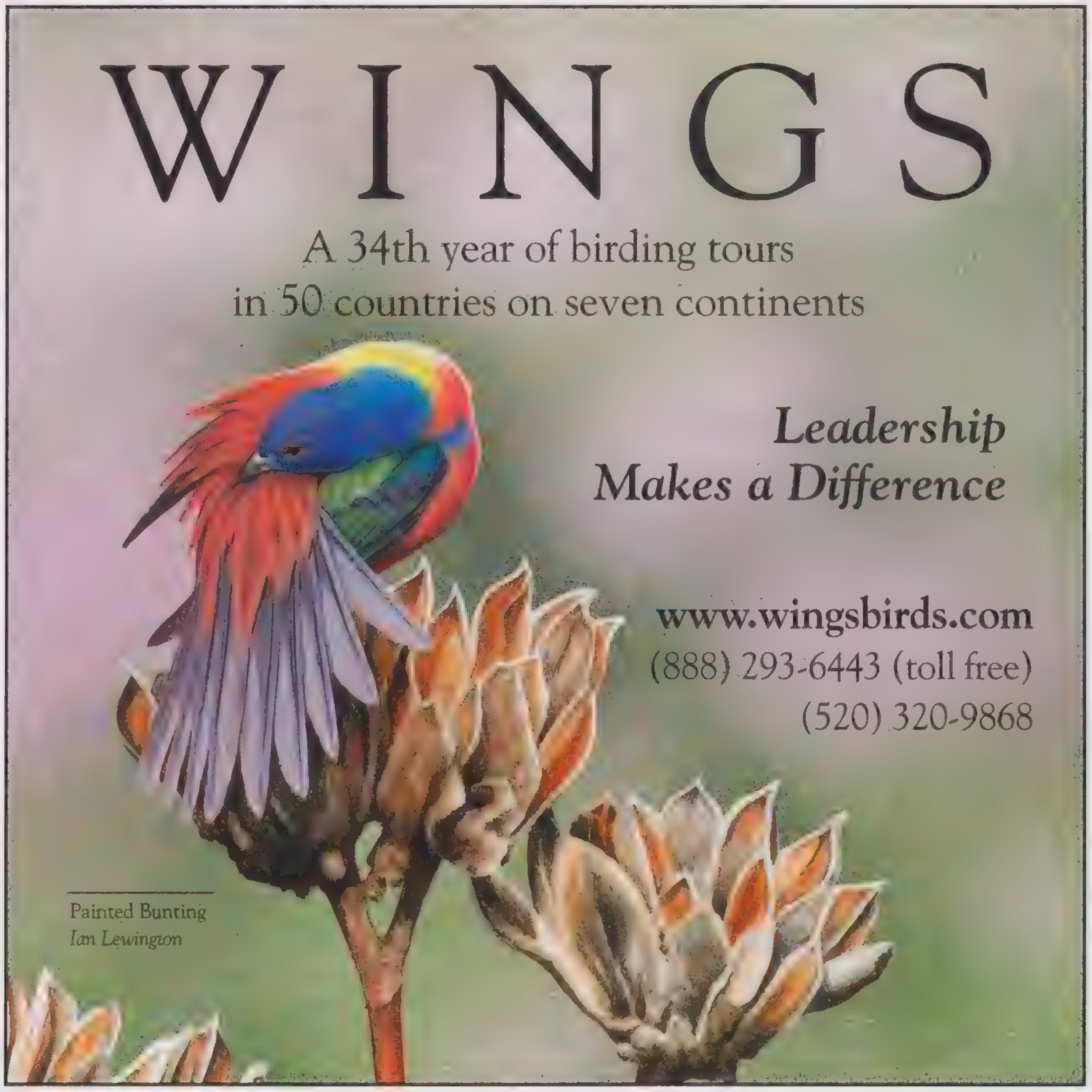
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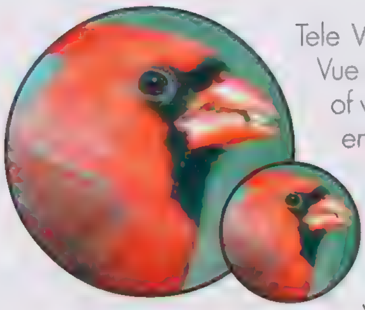

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ENTERING BIRDING COUNTRY

by Pete Dunne

WARNING: You are entering an area known to be infested with birders. For your safety and theirs, please read and heed the following instructions. It may save you considerable distress.

Despite their well-earned reputation for odd behavior, birders tend to be fairly docile and are usually not dangerous unless provoked. Knowing this, and learning how to behave when confronted by a birder, will make you more secure and greatly increase your chances of avoiding an embarrassing confrontation.

First, if you encounter a birder in the field, don't appear startled. If birders sense that you find their interest the least bit odd they will almost certainly respond with focused indifference.

Second, look friendly, even interested. Birders respond to honest, intelligent questions the way tent-revival ministers embrace sinners. The proper way to express your interest is to say, "See anything good?" or "What have you got out there?"

Never try to be funny or clever. Do not, for example, walk up to a birder who is scanning exposed sandbars offshore and ask: "See any Ivory-billed Woodpeckers out there?"

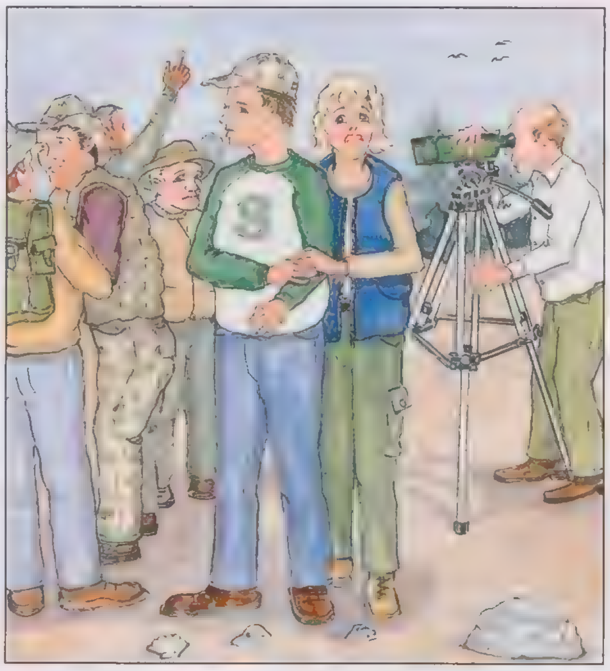
You, of course, are simply trying to show your interest and express your knowledge of current events in the birding world. But a birder is more likely to respond to your question by thinking: What kind of mental midget would think that a forest woodpecker would be dogpaddling around in an ocean?

They may not say this, but they will certainly think it. And having now distinguished yourself as an idiot, your chances of surviving the encounter in an amicable fashion are considerably diminished.

Be careful. Even things said in honest innocence might trigger a dismissive response by a birder. Things like "Are you looking at ships?" or "How far can you see with those things?" might seem unprovocative, even germane. But to a birder scanning for the reported Black-tailed Gull, such oblique inquiries are likely to pose an unwanted distraction.

Watch for these danger signs. Eyes rolled skyward. Eyes squeezed shut and head moving slowly side to side. Head turned slowly your way and face frozen in an expression that suggests your nose was put on backwards.

This is a very dangerous situation. Often birders at this point hand you their binoculars and invite you to "see for yourself." Their objective is to help you dig your own grave deeper and faster by demonstrating your ineptitude with binoculars. At this point, you have only one chance for redemption.



Appear bold and confident. Grasp the binoculars with one hand (using two hands demonstrates that you are afraid to drop $1,500 worth of glass in the sand).

Do not put the strap around your neck. This denotes possession, and even a Ghandi among birders will fight to the death to retrieve $1,500 binoculars.

Raise the binoculars to your eyes and move the focus wheel (it should be precisely where your index finger falls on a pair of $1,500 binoculars) until you achieve a clear image.

Pan the binoculars across the horizon, stopping at one, maybe two, places en route (as though you are studying something).

Draw the binoculars from your eyes. Give them an appraising look. Hand them back to the birder and say: "Nice."

Birders are intensely vain about their binoculars. By recognizing their superior quality, you will not only fan the birder's vanity but assuage his or her repressed anxiety about buying such an expensive toy in the first place (since there are $300 binoculars that will do pretty much the same thing as the $1,500 models).

With their vanity stroked, their anxiety diminished, you will find that birders become very docile, even cordial. They may start making esoteric references to things like a such-and-such-and-such back cross or an arrested second-winter blankety-blank. They may invite you to look at the digiscope images of "the bird they were lucky enough to find yesterday."

Don't be fooled. This is still a wild birder, deserving of your utmost respect. One incautious action on your part can turn this now friendly individual into a force of nature. If, for example, you fumble the hand-off and $1,500 worth of binoculars fall into the sand. If your sudden movement causes the gulls loafing on the breakwater to flush and head for the horizon. If another birder calls out, "I've got the bird over here," and you happen to be standing in the way, your chances of becoming collateral damage are high.

Don't let yourself become a statistic. Learn to respect birders and keep a safe distance. Remember, you have elected to place yourself in a habitat where birders are common. For your safety and the safety of other non-birders, show them the respect they are due. ■

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AUTUMN 2006 VOLUME 25 NUMBER 4

GREETINGS FROM SAPSUCKER WOODS

As I look out my window onto Sapsucker Woods, it is late September and the leaves are quickly turning into a profusion of brilliant autumn colors. This is my favorite time of year, and it always makes me feel nostalgic. It was exactly this time 16 years ago when I drove east from California and set up shop here as editor of *Living Bird.*

It's been an amazing experience watching things grow and mature and change here. When I arrived, the Lab of Ornithology was tiny—fewer than 40 dedicated souls housed in a simple one-story building from the mid-1950s. My office had been carved out of a space that once served as the garage for Lab founder Arthur Allen's car. It was sweltering in the summer and freezing in the winter, but we got by, and the Lab of Ornithology prospered.

Things have changed greatly in the intervening years. Now we have a staff of more than 200 and a beautifully designed building to house our constantly expanding programs. And the site where the old building stood has become a bird-feeding garden.

What hasn't changed is the enthusiasm of the people who work here and their dedication to the conservation of birds and other wildlife. Their example has always been an inspiration to me, and I'm sure it is what has kept me here for the past 16 years. I look forward to coming here every morning.

Tim Gallagher
Editor-in-Chief

Front cover: Greater Roadrunners are the feathered symbol of the Southwest, common in scrub and mesquite, where they forage for snakes, lizards, mice, and small birds. Photograph by Cliff Beittel.

Right: The magnificent Eurasian Capercaillie is the largest of the grouse, measuring up to 35 inches in length. A bird of the taiga forests of northern Eurasia, the species is now threatened by habitat destruction across much of its range. Illustration by Vadim Gorbatov. For a portfolio of Gorbatov's work, see page 26.

Back cover: This Greater Flamingo submerges its entire head and neck while foraging in a deep lagoon in the Galapagos Islands. Photograph by Cliff Beittel.

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The plains of East Africa offer one of the world's greatest wildlife viewing spectacles.

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A stunning portfolio of paintings by Russia's premier wildlife artist.

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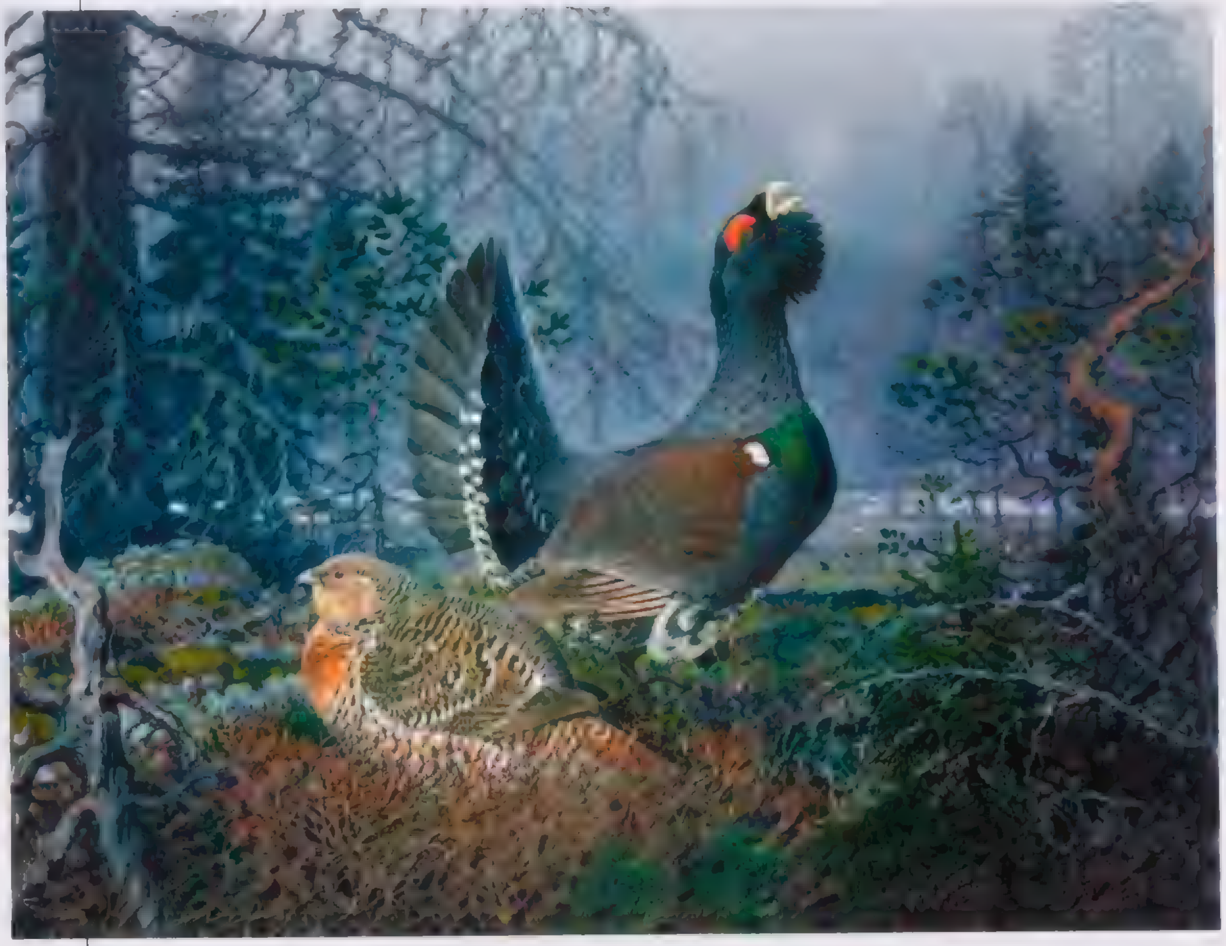

LIVING BIRD
AUTUMN 2006 VOLUME 25 NUMBER 4

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Cornell University

Letters

SHOULD WE TOLERATE NONNATIVE PLANTS?

In your article, "A Perfect Setting" (Winter 2006), you ask for input from readers concerning whether or not to restore the sanctuary to a landscape of native plants. The answer seems to lie in the question posed on page 31: "What if a diverse community of birds flourishes best where there are lots of berrying shrubs, including nonnatives? The birds love them."

It seems to me that this is what it's all about: what the birds love. Taking your cues from the birds is probably your best bet. That means doing what is necessary to maintain a habitat where the greatest biodiversity can thrive, which in turn benefits a greater avian diversity. This would entail managing the habitats in such a way that both natives and nonnatives can coexist in reasonable harmony, without any single species (plant or animal, native or nonnative) being allowed to overrun the area to the detriment of any other species. A certain amount of control of nonnatives is necessary, but totally wiping them out could have the adverse consequence of reducing the number and variety of bird species in your sanctuary.

Since you already have a wide diversity of habitats on your property, it would seem wise to continue allowing them to thrive as well as possible, to help preserve and perhaps even increase the successful results you are now experiencing. Careful management should keep invasive species sufficiently in check without entirely eliminating them, since their presence may be attracting and retaining a greater diversity of birdlife than would be possible if only native plant species were allowed to exist. The trick is to maintain as nearly perfect a balance as possible. They do seem to be contributing in a positive way, as indicated by the birds that "love them." Even nonnative bugs may provide additional insect food for the birdlife, and hence serve a positive purpose, providing their numbers don't get out of hand. It's possible that some of these tree species may develop their own defenses against these foreign attackers, given sufficient time. It's also important to maintain the delicate predator-prey balance.

It seems obvious from your article that many avian species, as well as other wildlife in your sanctuary, have managed to adapt and use nonnatives to their advantage. They wouldn't be there in such abundance if that weren't so. In this sense, it appears that nature is "taking care of itself," in spite of human interference. It might not be such a good idea to restore this area exclusively to native landscaping.

Jan Renfrow
St. Maries, Idaho

BEYOND FIRST IMPRESSIONS

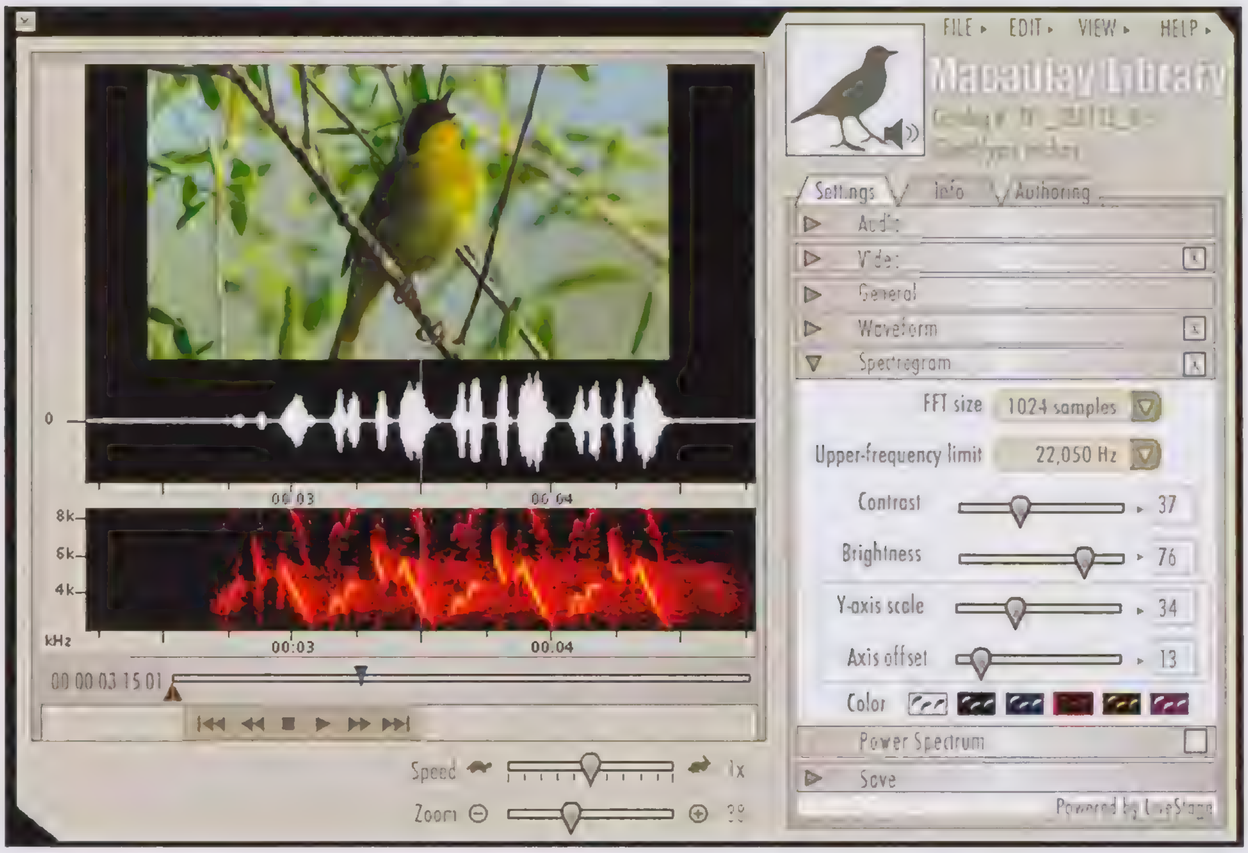
Kevin Karlson's "Birding by Impression" in the Summer 2006 issue of *Living Bird* was enjoyable, especially since I like to bird that way, too. Two observations though: (1) Isn't this just what the British have been calling "jizz" all along? And (2) Unless you're content to keep your rare or unusual sightings to yourself, you aren't going to get a records committee to accept a difficult identification unless you throw around plenty of phrases like "worn tertial feather edgings," "distinct malar stripe," or "pronounced gonydeal angle." These are definitely not impressionistic characters, so you still have to look at the bird closely and learn the argot.

Karl David
Racine, Wisconsin

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

BirdNews

Macaulay Library Receives Award



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Raven Viewer, a new web-based program developed by the Lab's Macaulay Library, provides free access to thousands of wildlife sounds, spectrograms, and images.

The Lab of Ornithology's Macaulay Library received a great honor this past September when *Science* magazine and the National Science Foundation announced the 2006 winners of the "Science and Engineering Visualization Challenge."

Macaulay Library director Jack Bradbury and his colleagues, Guillaume Iacino, Erica Olsen, and Robert Grotke took second place in the "Interactive Multimedia" category for their web-based application allowing anyone to visualize the sounds archived in the library's digital collection of natural sounds and videos.

This application, called Raven Viewer, was developed in collaboration with the Lab's Bioacoustics Research Program and provides spectrograms and waveforms in real time as the user listens to sounds or watches video clips from the collection. For the first time, more than 65,000 sound recordings and some 18,000 video clips are available for online browsing.

Visitors to the Lab of Ornithology's web site can listen to the sounds of a wide variety of animals, from seals, whales, and fishes to insects and, of course, birds, while watching videos of many of the species. Easy-to-use control bars allow you to adjust the color of the spectrograms, the brightness of the images, and more.

Raven Viewer can be used free by anyone who has a computer, an Internet connection, and a QuickTime player (which can be downloaded from the web site). Simply go to <www.animalbehaviorarchive.org> and follow the directions.

The "Science and Engineering Visualization Challenge" is an international contest sponsored by *Science* magazine and the National Science Foundation. Their aim is to recognize the importance of illustrations, photographs, videos, and other visual forms in advancing scientific literacy among the general public and to showcase and encourage this kind of work.

Submissions this year were invited in five categories: photography, illustration, informational graphics, noninteractive multimedia, and interactive multimedia. Committees from *Science* magazine and the National Science Foundation screened all entries and chose finalists, which were then judged by an independent panel of experts in the field of scientific visualization.

To find out more about the contest winners, visit the American Association for the Advancement of Science web site at <www.aaas.org/news/releases/2006/0921visual.shtml>.

IVORY-BILLS IN FLORIDA?

A team of researchers from Auburn University in Alabama and the University of Windsor in Ontario, Canada, recently published an article in *Avian Conservation and Ecology* announcing the possible discovery of a small population of Ivory-billed Woodpeckers in the Florida panhandle.

The article, "Evidence Suggesting That Ivory-billed Woodpeckers (*Campephilus principalis*) Exist in Florida," by Geoffrey E. Hill, Daniel J. Mennill, Brian W. Rolek, Tyler L. Hicks, and Kyle A. Swiston, describes a series of observations of possible ivory-bills made between May 21, 2005, and May 19, 2006, along the Choctawhatchee River. The authors include pictures of suitable roost holes in trees along the river, foraging signs typical of the species, and intriguing sound recordings of possible double raps and *kent* calls.

Read the current issue of *BirdScope* for more information about this exciting new development in the search for the ivory-bill or visit the Lab of Ornithology web site at <www.birds.cornell.edu/ivory/floridaannouncement/document_view>. To read the article in *Avian Conservation and Ecology*, go to <www.ace-eco.org/articles/78.html>.

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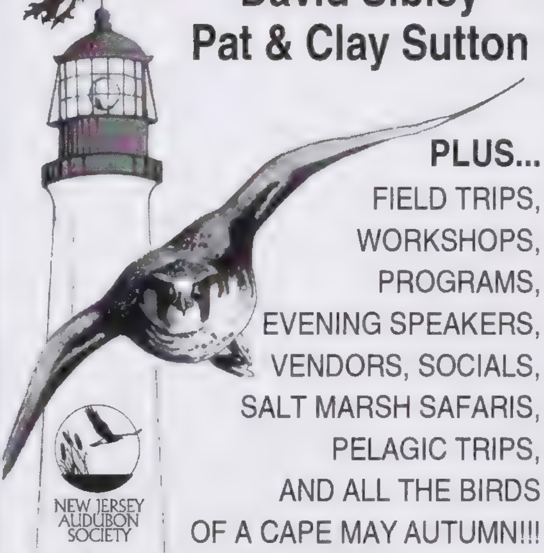

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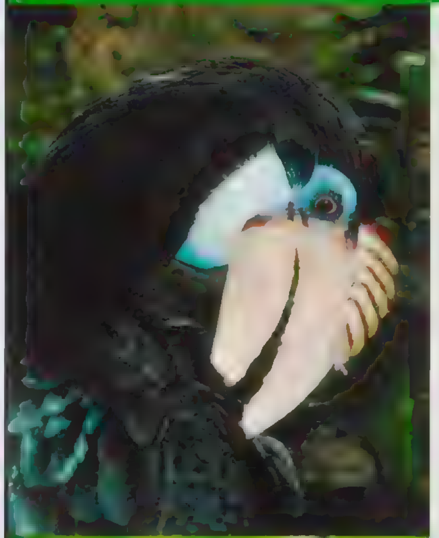

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GIVING GUATEMALA ANOTHER CHANCE

by Mel White

Private nature reserves invite birders to explore Guatemala's highlands

Question:
Why did the birder take the right-hand fork in the path when a Resplendent Quetzal was calling 50 yards to the left?

Answer:
To get to the Azure-rumped Tanager.

That, at any rate, was my answer to this particular riddle, though there were others of nearly equal validity. To get to the Spotted Nightingale-Thrush, for instance, or the Highland Guan, or the Blue-throated Motmot.

Such were some of the possibilities one March morning at Los Andes, a combination plantation and private nature reserve on the southern slope of Guatemala's Atitlán volcano. My host for the day was Olga Hazard, whose family has owned Los Andes since 1985.

Noisy flocks of Pacific Parakeets flew overhead as we drove up from the Hazards' house through fields of coffee and tea and groves of young macadamia trees.

"For fifty years, Lipton bought this estate's production, but they've moved their operations to South America," Olga said. "So we've found ways to diversify. We market our own certified ecologically grown coffee and organic tea, and we've become a preferred supplier for Starbucks."

A pair of Masked Tityras grunted as our group got out of the SUVs. Bushy-crested Jays popped up in nearby bushes to investigate the new arrivals.

"We don't allow vehicles in the reserve," Olga said. "We'll walk from here."

The estate's 1,500 acres span elevations from 3,000 to 6,000 feet; 60 percent of the property is natural forest, including all the area above 5,000 feet. Anne LaBastille did research on quetzals here in the 1960s; the species breeds regularly in the reserve, both in natural cavities and in nest boxes. In recent years, though, Los Andes has become known as a place to find Azure-rumped Tanager, a bird endemic to only a small area of highland cloud forest in Guatemala and extreme southeastern Mexico.

Leaving the tea plantation, we immediately entered a gorgeous forest thick with palms, tree ferns, heliconias, epiphytes, vines, and enormous ficus, cedrela, and other trees. A female Black-crested Coquette flitted around a shrub, seemingly catching insects, but I had my back turned when the male made a fleeting appearance.

A bit farther along the trail, our bird guide, Jesús, raised a finger to call our attention to the throaty call of a quetzal not far away. A brief discussion ensued. If we want to see the tanager, Jesús said, we should keep moving. We turned our backs on the sound and headed higher up the flank of Atitlán.

Like many countries, Guatemala sees tourism as one way to help economic development. Only for the past two or three years, though, has the government's official tourism agency seriously begun to appeal to birders. In essence, Guatemala saw Belize and Costa Rica making money from bird watching and thought, "Why shouldn't we get some of that?"

Guatemala certainly has the birds: nearly 700 species in a country the size of Tennessee. Unfortunately, it also has a relatively recent history of political conflict. For decades, right-wing dictatorships maintained a near-feudal system in which a few dozen families controlled nearly all of the economic and political power. Reformers were brutally repressed by a military that essentially functioned as the ruling elite's private enforcers.

Years of de facto civil war between the government and an organized insurgency came to a purported end with a 1996 peace agreement, which promised political, economic, and land reform. Things have improved since then, but reputations die hard. An American birder contemplating a trip to the tropics still thinks first of Costa Rica, Belize, Panama, Ecuador, or even Peru.

Indeed, when I read the official State Department travel advisory for Guatemala, I was taken aback by its warnings about crime, including robbery at highway roadblocks. Poverty is pervasive, and thousands of weapons are still out in the countryside, owned both by ex-soldiers and *insurgentes*. There are stories of birders being robbed of their money and optics while visiting remote areas.

"We know that the information about Guatemala concentrates on everything bad," Julissa Rivera told me one night at dinner in a fancy Guatemala City hotel. A representative of INGUAT, the government tourism agency, Rivera shook her head when I told her that I'd been caught up (though not robbed or even threatened) in a roadblock by *insurgentes* near Tikal in 1986. "Guatemala is a very different place today than it was twenty years ago, or even ten years ago," she said. "We need to change that image—that's our first goal."

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This spectacular view of the Guatemalan Highlands shows Fuego Volcano (at left) and Agua Volcano (center). Juan Rivera's family estate stands in the shadow of Agua Volcano, near the historic city of Antigua Guatemala.

Selvin Pérez, the personable biologist who was my guide for a week, spoke up. "If someone wants to come here, they need good advice about where to go and what roads to take," he said. "This government has made a great effort to increase security and to publicize the value of tourism among Guatemalans. We offer more security on the roads. Now the government should let international visitors know about what it has done."

It's a double-edged sword: To assure tourists that things are better, Guatemala must implicitly acknowledge past problems, and that's not something tourism agencies enjoy doing.

Julissa Rivera has, like her country, only recently come to appreciate the unique desires and needs of birders. "I didn't know anything about birding before," she said. "It's so strange—bird watchers just want to see birds. If you go with them on the bus and the bus stops anywhere, they all get out and look around. It's like they don't want to do anything else."

Because I'd been to the lowland forests of Tikal and adjacent Belize, I spent my time in the highlands of south-central Guatemala, mostly above 4,000 feet. The substantial number of species endemic to this upland ecosystem, which stretches from Mexico to Nicaragua, gives it great potential for birding tourism. My first morning in the country I not only began experiencing endemic birds, I saw firsthand the near-term model for conservation in Guatemala.

Juan Rivera's family owns a hilly expanse of land near the historic city of Antigua Guatemala in the shadow of Agua Volcano. Juan earned a degree in ecotourism from the University of San Carlos, where he took an ornithology course from Selvin Pérez. I met him along a dirt road that snaked above a canyon thickly wooded with pines, oaks, and ficus.

"My grandfather bought this property in the 1980s for timber, but he fell in love with the place and never cut it," Juan said. Now, part of the area has been set aside as a private reserve under a government-sponsored program that gives tax incentives to landowners who designate tracts of land for conservation or watershed protection or who practice approved methods of timber management. Given the current political situation in Guatemala, it's unlikely that new national parks or preserves can be created; government and private conservation agencies are counting on private incentives to save significant areas of habitat, especially highland pine-oak and cloud forest.

Selvin Pérez works with the conservation group Defensores de la Naturaleza, and he spends much of his time urging landowners to participate in these important programs and helping them meet the requirements.

Higher up the road, in a clearing above 6,000 feet, Juan showed me where he intends to build an ecolodge for birders and other tourists. Such facilities are opening all over Guatemala, often with the assistance of conservation groups, in an effort to help landowners make money without clearing forests.

We were in mixed woodland here, where pine-oak forest was changing to evergreen cloud forest. Rufous-collared Robins, Gray Silky-flycatchers, Black-headed Siskins, and Bushy-crested Jays flew from tree to tree, while Black-capped Swallows zoomed overhead. I could hear Crescent-chested Warblers and the amazing song of the Brown-backed Solitaire, and as we climbed higher under alders and cypresses we saw Emerald Toucanets and a pair of Collared Trogons (which locals call *quetzalillo*, or "little quetzal").

Juan led us to a kanak tree, loaded with spectacular red flowers, and equally loaded with warblers and hummingbirds. (It was my first experience of the abundance of Townsend's Warbler in this habitat, along with great numbers of Wilson's, Hermit, Tennessee, Black-throated Green, and Black-and-white warblers—a graphic demonstration of the vital importance of these forests for many of "our" breeding birds). Among the common White-eared Hummingbirds, Selvin pointed out a couple of Green-throated Mountain-gems, another of the special species of this region. Several times we heard, but didn't see, a Blue-throated Motmot.

In the next few days I saw other private reserves, including Rio Escondido Private Nature Reserve and Ecolodge, on the bank of the Matanzas River, a couple of hours northeast of Guatemala City. Owner Arturo Minero protects a tract of pine-oak woods and is reforesting old cattle pastures, hoping to make a profit from nature-loving tourists rather than from timber-cutting. The lodge is less than 30 miles from the spot where the Golden-cheeked Warbler was discovered in 1860 (the bird wasn't found in Texas until four years later). Selvin has studied the species' habitat preferences and foraging activities in Guatemala, and in fact we saw a

Darryl Abraham

A whimsical series of limited edition prints by renowned Naples, NY artist **Darryl Abraham**. This series, titled "Katy's Birds" is a dedication to his mother, Katherine Abraham, and can be purchased exclusively through Vagabond Gallery, Canandaigua, NY. Please visit the site for more info or call the gallery at 585-394-8680.
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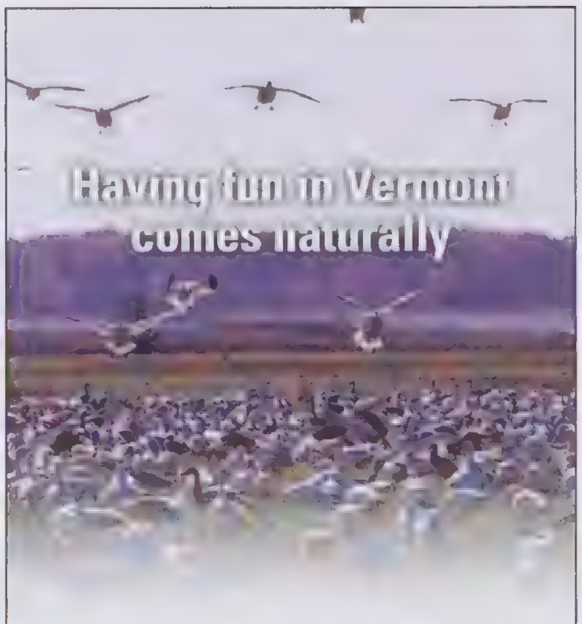
Darryl Abraham is an artist, illustrator, and teacher whose folkloric, humorous style has captivated collectors throughout the nation. His work is part of several private collections, as well as the National Gallery in Washington DC and the US Embassy in Japan.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beautiful male one drizzly morning at Rio Escondido, feeding in oaks in a mixed flock that included Townsend's and Crescent-chested warblers and Slate-throated Redstarts.

"He is an obligate feeder in encino oaks," Selvin said. "Also, he is an obligate feeder in a group." We walked down the trail to the tree in which the golden-cheek was feeding. "See, it's just a small oak, maybe five years old. You can have good management of a forest and still leave these trees."

Less than three minutes after seeing the golden-cheek, an Emerald Toucanet appeared in a trailside tree, producing what I previously would have thought an odd juxtaposition of species sightings.

"We are very near the cloud forest," Selvin said, "so birds like the tucaneta come down sometimes. Even the quetzal has been seen here several times."

Later, we saw the beautiful "Goldman's" race of Yellow-rumped Warbler and a Brown-capped Vireo, and had wonderful views of a Common Black-Hawk. The most thrilling sight, though—and indeed, the most spectacular experience of the trip—was a flock of literally thousands of Tree Swallows swirling in the adjacent valley, at times perching in what looked like wax myrtles to feed on the berries. As we walked through a nearby field full of the shrubs, the birds came to us. It was like being caught up in a feathered tornado.

The next day I visited Chichavac, the estate near the town of Tecpán where renowned ornithologist Alexander Skutch spent 13 months in 1933–34, studying the birds of the highlands. Owner Salvador Pirá graciously showed us around his 19th-century house and inviting backyard, where travelers can rent a camping spot. Here, too, a big kanak tree was swarming with birds: warblers, hummers (including Magnificent), Black-vented Orioles, and my first Blue-and-white Mockingbirds. A small group of Steller's Jays (the short-crested race) flew around the yard, and I found a singing Rufous-browed Wren by the parking lot of the family-owned restaurant across the highway. We were after something a little more colorful, though.

We bumped up a dirt road to the Pirá private reserve, stopping for birds like Elegant Euphonia, Black-throated Jay, Golden-browed Warbler, and Cinnamon-bellied Flowerpiercer. It took only a little time to find our target here: Pink-headed Warbler, another of the species endemic to the highlands of southern Mexico and Guatemala. A pair flitted through the trees for several minutes, mostly staying behind branches but occasionally showing their striking plumage, an almost artificial-looking mix of red and pink.

My last day in Guatemala was spent at the Hazards' Los Andes estate, perhaps the major reason I would gladly return to Guatemala for more birding and exploration. As we circled east and south of Lake Atitlán on the road to the reserve, three White-throated Magpie-Jays let us know that we had crossed to the Pacific slope.

The forest in Los Andes reserve was the most impressive I saw on this trip, although the Rivera reserve's forest was nearly its equal. I can imagine at least a couple of days of happy walks along the trails. As it was, my morning brought Scaly-throated Foliage-gleaner, Spotted Woodcreeper, Spotted Nightingale-Thrush, Golden-crowned Warbler, and the promised Azure-rumped Tanager—a pair feeding in the top of a ficus and giving high, thin, slurred hiss-whistles. It also brought the sounds, though not the sight, of Highland Guan, Scaled Antpitta, and Blue-throated Motmot. That last one I heard many times during my trip, but it always lived up to its reputation as *muy secretivo.*

Just as I was saying a reluctant adiós to Los Andes—literally getting into the car to drive back to Guatemala City—I heard, "Mel, come here!" from Hugo Enríquez Toledo, an ornithologist and bird guide who was part of our group that day. I rushed over to see a glittering male Blue-tailed Hummingbird (another regional endemic) feeding on flowers in the Hazards' front yard.

I hope that Guatemala has a bright future in birding and ecotourism. I hope that political reform continues and democracy grows stronger, that poverty and crime diminish. The birds are tremendously inviting and parts of the landscape are beautiful; I hope that financial and other incentives effectively encourage conservation and habitat protection.

My trip was near-idyllic, in the birds, the people, and even the food. Admittedly, I had a guide who knew where to go, and who introduced me to good places and knowledgeable people.

Is Guatemala safe for birders? Is Costa Rica? (Crime is an increasingly serious problem in certain areas there.) Is southern Texas? (Birders have been robbed on trails in the Rio Grande Valley.) When you see police parked every 10 miles on major highways, is it a comforting sign of security or worrisome evidence of possible violence? I can only say that I would happily return, asking local people for advice and taking my chances. I can say, too, that the traffic and the behavior of drivers on the crowded highways seemed far scarier than anything else I experienced in the country.

INGUAT, the national tourism agency, has instituted a toll-free telephone hotline to assist tourists, of which Guatemala receives around 1.4 million a year. With the help of consultants and conservation organizations, existing tour operators are adding staff to cater to birders, and new companies are forming specifically to arrange trips for birding and ecotourism. (One example is Operador Latino, <www.operadorlatino.com>, which can set up visits to Los Andes, among other places.) Selvin Pérez and other locals are planning a birder's guide to Guatemala, which would offer advice about destinations, lodging, and finding endemics, making independent travel much more feasible. In the meantime, though, if it were my first trip I'd certainly consider using an in-country tour agency that specializes in birding. If I rented my own vehicle, I'd also resign myself to occasionally getting lost, and I'd practice the most defensive driving tactics possible.

I'll be back, I trust, someday—to look for Blue-throated Motmot, Highland Guan, and even the legendary Horned Guan, which lives in the cloud forest not far from Los Andes. Guatemala is too near, its landscape too diverse, and its birds too wonderful not to return to enjoy it all again. ■

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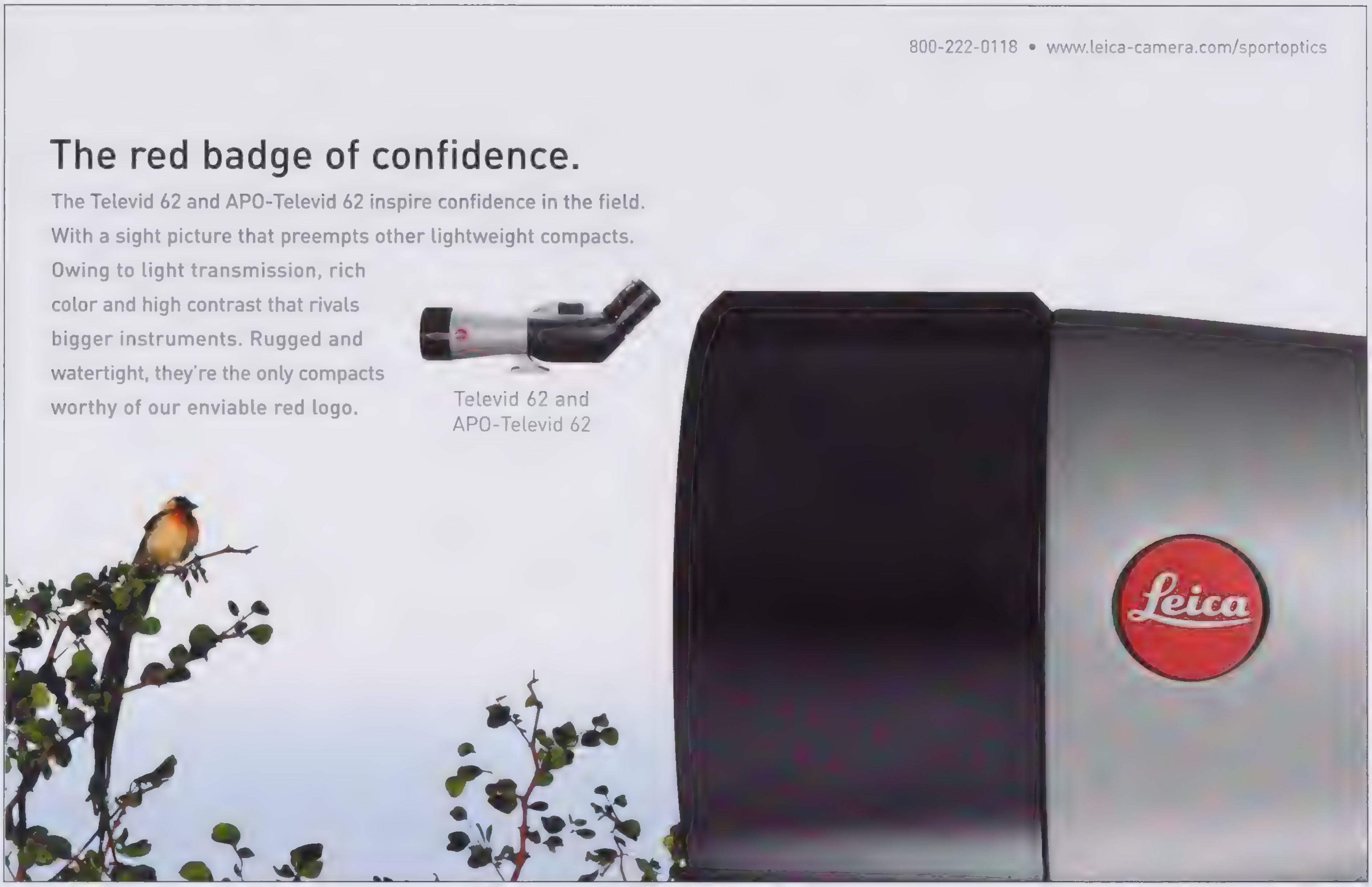

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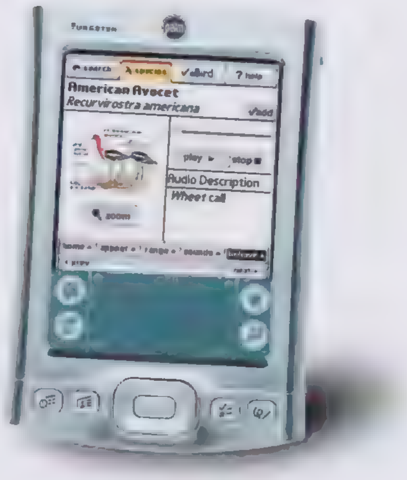

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A Yellow-billed Stork forages in the shallows along a lakeshore in the Serengeti Plains. This was just one of the 20 species of birds the author saw in his first hour of birding in Tanzania.

SERENGETI SAFARI

TEXT AND PHOTOGRAPHS BY GARY KRAMER

The plains of East Africa offer one of the world's greatest wildlife viewing spectacles

Roosting near the Greater Flamingos were six species of waterfowl—Egyptian Geese, Red-billed Ducks, Yellow-billed Ducks, Hottentot Teal, and both White-faced and Fulvous whistling-ducks. Offshore a flotilla of Great White Pelicans worked the shallows as a pair of Yellow-billed Storks probed the lakeshore for food. Only an hour had passed since we left the lodge, and we had already identified 20 species of birds.

As I photographed a pair of Egyptian Geese, they suddenly stopped feeding. I glanced up just in time to see a Tawny Eagle diving toward an unsuspecting Yellow-billed Duck. The bird narrowly escaped, flushing just before the outstretched talons would have met their mark. The commotion scattered the birds, forcing us to move farther down the shore. By the end of the day we had tallied nearly 40 species of birds and photographed more than a dozen at close range.

This was the first day of a 14-day birding safari I took to the Serengeti Plains in Tanzania back in 1990. I have since returned to Africa 22 times to view and photograph the incredible assemblage of wildlife inhabiting this remarkable continent.

Interspersed with the gently rolling savannas of the Serengeti are acacia woodlands and thorn thickets, above. At left, a pair of Secretary-birds perch together in an acacia tree. An exquisite Gray Crowned-Crane forages in a savanna adjoining a marsh (facing page).

The Serengeti ecosystem extends from the sweeping grasslands of northern Tanzania to the gently rolling savannas of southeast Kenya. Interspersed in what at first glance looks like a never-ending sea of grass are woodlands and thorn thickets, rivers lined with wild fig and palms, freshwater and soda lakes, marshes and kopjes (strange granite outcrops that form their own unique habitats). Established in 1951, Serengeti National Park in Tanzania encompasses more than 8,000 square miles, protecting more than 90 percent of the Serengeti ecosystem. The northern extension of the Serengeti lies in Kenya and is protected by the 700-square-mile Masai Mara National Reserve.

In Kenya—a country roughly the size of Texas—1,084 species of birds have been recorded, compared with 1,046 species in Tan-

TRAVELING TO THE SERENGETI

Although birding and wildlife viewing are good any time of year, to combine the best viewing of large mammals and birds, two locations and time frames are the most rewarding. Trips to the Serengeti National Park from January through March combine birding for resident and migrant species as well as viewing concentrations of grazing animals and predators. At this time of year, the annual wildebeest migration brings more than a million herbivores to the southern Serengeti, where the wildebeests calve. This period comes between the short and long rains, so access is good and rainfall is generally minimal.

The other location is the Masai Mara National Reserve in Kenya between July and October. This period coincides with the dry season and the migration of wildebeests to the Mara. Although migratory birds are absent at this time of year, the rich diversity of the avifauna and the concentration of mammals more than make up for it.

Because the Serengeti ecosystem is close to the equator, the climate is relatively constant with daytime temperatures averaging 70 to 80 degrees Fahrenheit all year long. Much of the region lies above 4,000 feet, which also tempers the climate. Nights can be cool, and a light jacket for early morning game drives is necessary.

Kilimanjaro International Airport in Arusha, Tanzania, is the point of arrival for travel to the Serengeti National Park, whereas Nairobi is the gateway to the Masai Mara National Reserve in Kenya. KLM Royal Dutch Airlines, (800) 374-7747, has the only direct flights to Kilimanjaro Airport from Europe, but several airlines—including KLM; British Airways, (800) 247-9297; and Kenya Airways, (866) 536-9224—serve Nairobi from various cities in Europe. There are no direct flights from the United States to East Africa.

For general wildlife viewing and photographic safaris to Tanzania and Kenya, contact African Travel at (800) 421-8907, web site: <www.africantravelinc.com>.

Author Gary Kramer also offers escorted trips to Kenya, Tanzania, and Botswana. He can be contacted at (530) 934-3873, web site: <www.garykramer.net>.

The Serengeti Plains offer a wildlife viewing spectacle unlike any other on earth, where large African mammals such as giraffes (left) and zebras (above) can be viewed up close. Because this area has been protected for more than a half century, generations of wildlife have learned to accept safari vehicles as part of the landscape. At right, a Red-billed Oxpecker forages for insects on a zebra's back.

zania. Although the two countries share many species, it is no exaggeration to say that the number and diversity of birds in East Africa are astounding. Compare these numbers with some 250 species in Great Britain and 850 in North America. Simply put, the Serengeti is an absolute mecca for birders and wildlife photographers.

The next stop on my journey produced a pair of Spur-winged Geese. Named for the bony spur at the joint of the wing, they are impressive birds—adult males weigh up to 15 pounds. From our vantage point in the Land Cruiser, we watched as both Greater and Lesser flamingos moved back and forth with heads down and bills immersed, filtering algae from the water. Along the shoreline, a Blacksmith Plover scolded us with its distinctive *klink, klink, klink* call, like the sound of a blacksmith hammering on an anvil—hence its common name. We spotted a Common Moorhen, one of the few birds found in both North America and Africa, and a pair of exquisite Gray Crowned-Cranes in the savanna adjoining the marsh. A pair of Secretary-birds prospected for a nest site in an acacia tree.

From the southern portion of the Serengeti, we headed north passing through acacia forest. On the edge of the trees our driver, David, stopped the Land Cruiser and pointed into the woodlands. It didn't take long for us to spot tails switching and long necks reaching high into the canopy to strip leaves from the tops of the trees. As we watched, a group of six giraffes, some with young, moved to the edge of the woodlands in full view.

In addition to birds, the Serengeti offers amazing views of elephants, giraffes, Cape buffaloes, Thompson's and Grant's gazelles, impalas, and hartebeests, not to mention some 1.5 million wildebeests and zebras. The wildebeests and zebras, along with elands and other grazers, make a seasonal migration from the southern Serengeti to the northern reaches

A White-backed Vulture (above) comes in for a landing near a dead wildebeest being devoured by hyenas. As soon as the hyenas departed, the vultures moved in, reducing the remnants of the kill to a pile of bones in a matter of minutes.

of the ecosystem, eventually ending up in the Masai Mara. Along the way they encounter predators—lions, leopards, cheetahs, and hyenas—that feast on the bounty as the migrating herds move through their territories. Once the migration passes and the days of plenty are over, the predators stay behind, hunting the resident zebras, gazelles, warthogs, waterbucks, and other local prey.

Most African safaris offer the opportunity to view a variety of birds and mammals, ranging from elephants to lions to tiny dik-dik antelopes at close quarters. The Serengeti has been under some form of protection for more than 50 years, and safari vehicles range across the entire area virtually every day of the year. As a result, many generations of wildlife have been born literally in view of a safari vehicle, and they accept them as merely part of the landscape. On several occasions, I have seen lions and cheetahs get up from a midday nap and walk over to a vehicle to lie in its shade. Similarly, I've seen Yellow-necked Francolins run under vehicles to escape from hunting hawks. For photographers and anyone interested in wildlife viewing it is truly a magical place.

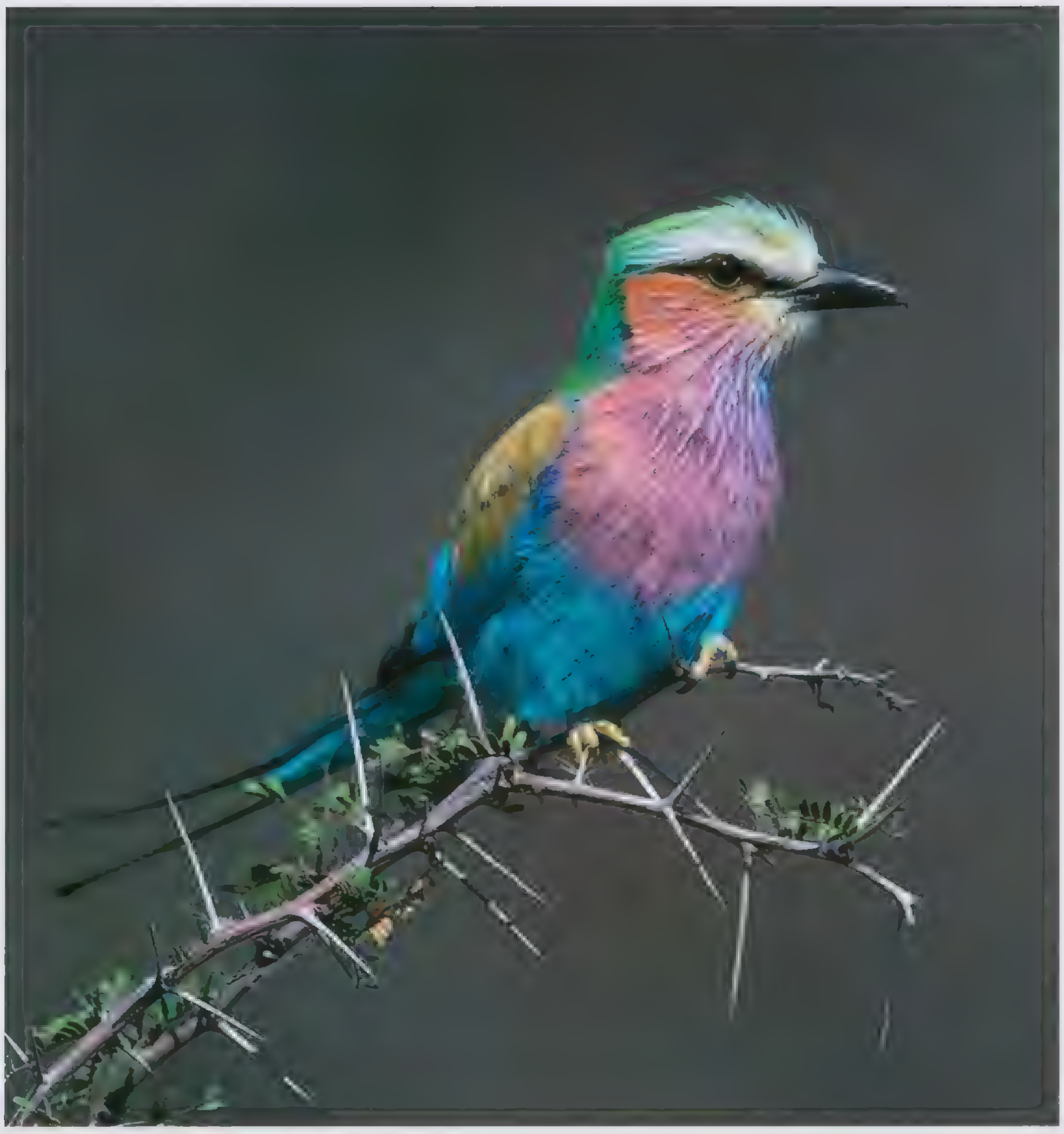
East Africa has only wet seasons and dry seasons, but these vary from place to place and year to year. Most areas have two rainy periods. The "long rains" usually occur from March until May, followed by a five-month dry period. The "short rains" generally start sometime in October and last until December. The avifauna of the Serengeti is influenced not only by this annual moisture cycle but by the annual migration of birds from as far away as Russia and Scandinavia.

After the short rains, many of the resident birds begin setting up breeding territories, and migrants such as White Storks come from Europe and waterfowl and shorebirds arrive from the steppes of Russia. One of the most impressive residents is the Kori Bustard, a large ground-dwelling bird standing up to four feet tall. This species is most conspicuous during the breeding season, from February through April, when the males strut across the open plains, displaying their puffed-up throat sacs and raised tails to attract potential mates.

After leaving the giraffes, we drove through the acacia forest and then followed a road along the edge of the woodlands. Along the way we spotted several Lilac-breasted Rollers, a relatively common species in the Serengeti but one of the most beautiful. As we made our way toward the open grasslands, we found a pair so intent on catching grasshoppers that they allowed us to drive within 25 feet of their favorite perch, providing incredible close-up photography. Soon after, we added Little Bee-eaters, African Mourning Doves, displaying Black-bellied Bustards, and our first group of Ostriches. The largest flightless bird in the world, the Ostrich stands up to eight feet tall and weighs about 295 pounds, dwarfing most of the grazing mammals in the Serengeti. As we approached the group of three females and a male, they stopped foraging long enough to make sure we posed no threat, then continued feeding. Later we came upon a small water hole where a pair of Yellow-necked Francolins drank alongside a flock of noisy Helmeted Guineafowl and a Namaqua Dove.

In the national parks, people are not allowed to get out of their vehicles except in designated areas such as picnic spots, park headquarters, and lodge compounds. All viewing must be done from the safety of safari vehicles, which are customarily Land Cruisers, Land Rovers, or minivans. Most of them have open roofs, and much of the wildlife viewing and photography takes place while standing in the vehicle, look-

One of the most impressive birds on the Serengeti is the Kori Bustard (right), a large ground-dwelling species that stands up to four feet tall. The males perform elaborate displays during courtship, ballooning out their breast feathers.



The stunning Lilac-breasted Roller (above) is a common inhabitant of the East African savanna, and is often seen perched conspicuously on a thorn bush or tree as it forages for insects.

ing out over the countryside. Photographers generally place beanbags on the roof to steady their cameras. On virtually every trip, I have seen predators making kills or at least have seen the aftermath of a kill. One of the most memorable was watching a female cheetah with two nearly grown cubs stalk and run down a young wildebeest. Thanks to the skill of our driver, we ended up only yards from the cheetah as it took down its prey. About the time the cubs arrived to share in the spoils, four hyenas showed up and chased the cheetahs away from their kill. Within 15 minutes, little more was left of the wildebeest than a pile of bones, hide, and scraps of flesh.

Sixty vultures (including Lappet-faced, White-backed, Hooded, and Reuppell's Griffon) showed up to wait their turn at the dinner table. The instant the hyenas departed, the vultures descended on the carcass, reducing it to bones in a matter of minutes. The interaction of the various vultures, storks, and jackals was fascinating to watch as they fought over every last scrap of meat.

The birdlife in the Serengeti is so varied, it's hard to keep up with the parade of species—particularly for first-time visitors whose every sighting is usually a life bird. Last year we spent an hour watching Yellow-throated Sandgrouse fly to the edge of the pond and wade in to collect water in their breast feathers. These specialized feathers trap water that the parents can then take back to their young, waiting patiently in a ground nest up to 30 miles away. Along with the sandgrouse, other birds took turns drinking, including Laughing Doves, a pair of Crested Francolins, Superb Starlings, Common Fiscals, Flappet Larks, beautiful Red-cheeked Cordonbleus, Holub's Golden-Weavers, and Red-billed Queleas.

At one point, a Dark Chanting-Goshawk arrived, spooking the other birds into the brush. After a drink and a quick bath, the goshawk took off, allowing the other birds to return. Later we spotted a soaring Bateleur—a large raptor with a unique flight silhouette characterized by a very short tail and broad-based wings. Then we watched an African Fish-Eagle, a bird related to our Bald Eagle, capture a catfish and return to a snag to eat it. In the marsh grass we spotted a Hadada Ibis and a Saddle-billed Stork—a magnificent wader with a unique yellow, red, and black pattern on its beak—searching the shallows for frogs and fish. We also got a close look at a Hamerkop, a brown wading bird with a hammer-shaped crested head. A few minutes later, a Gray-headed Kingfisher perched in a tree a few yards from our vehicle.

On our way back to the lodge that day we added huge Southern Ground Hornbills to our list of sightings and came across a herd of Cape buffalo that allowed us to approach close enough to get a look at the Red-billed and Yellow-billed oxpeckers that were investigating every crack and cranny of the bovines' hides. The oxpeckers were removing ticks and fleas from the massive beasts, which seemed only slightly annoyed by their hitchhiking avian friends. A dozen Cattle Egrets caught insects stirred up by the grazing buffaloes as they walked. One of the egrets flew onto the back of one of these huge animals and caught a ride.

That evening, one of the people in the minivan asked me if I ever got tired of going to Africa. I answered with a resounding "No!" For me Africa is a unique and captivating place that offers incredible scenery and extraordinary birding and photography. And every trip and every day in Africa is different—just around the bend at any time you might find a lion on the prowl, a brilliantly hued Lilac-breasted Roller catching insects, or a nesting Martial Eagle. That's why I know I will always return to Africa, and specifically to the Serengeti, knowing that each journey will be a new adventure. ■

Gary Kramer is a freelance writer and photographer based in Willows, California. He is a frequent contributor to this magazine.

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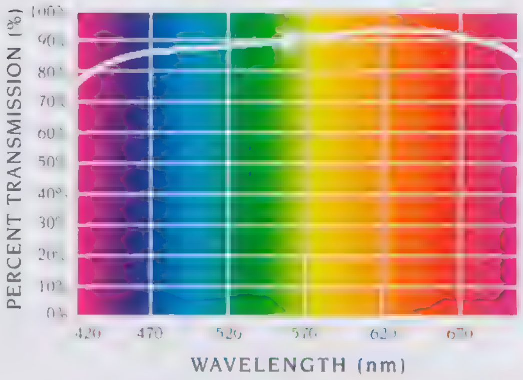

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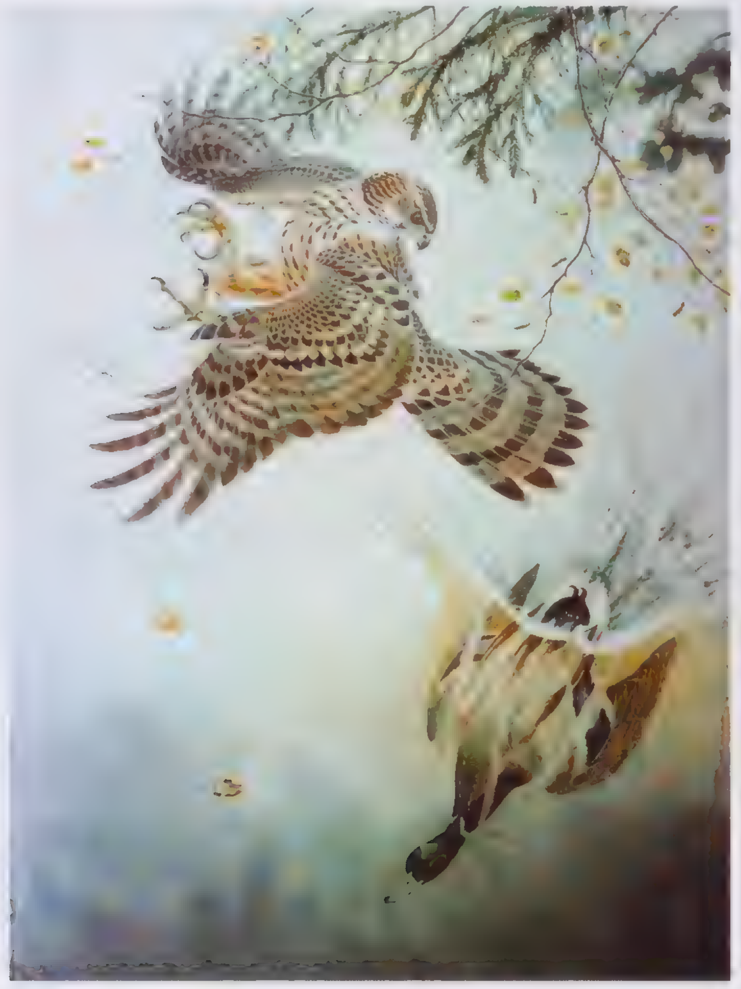
The Birds of Vadim Gorbatov

BY STEPHEN J. BODIO

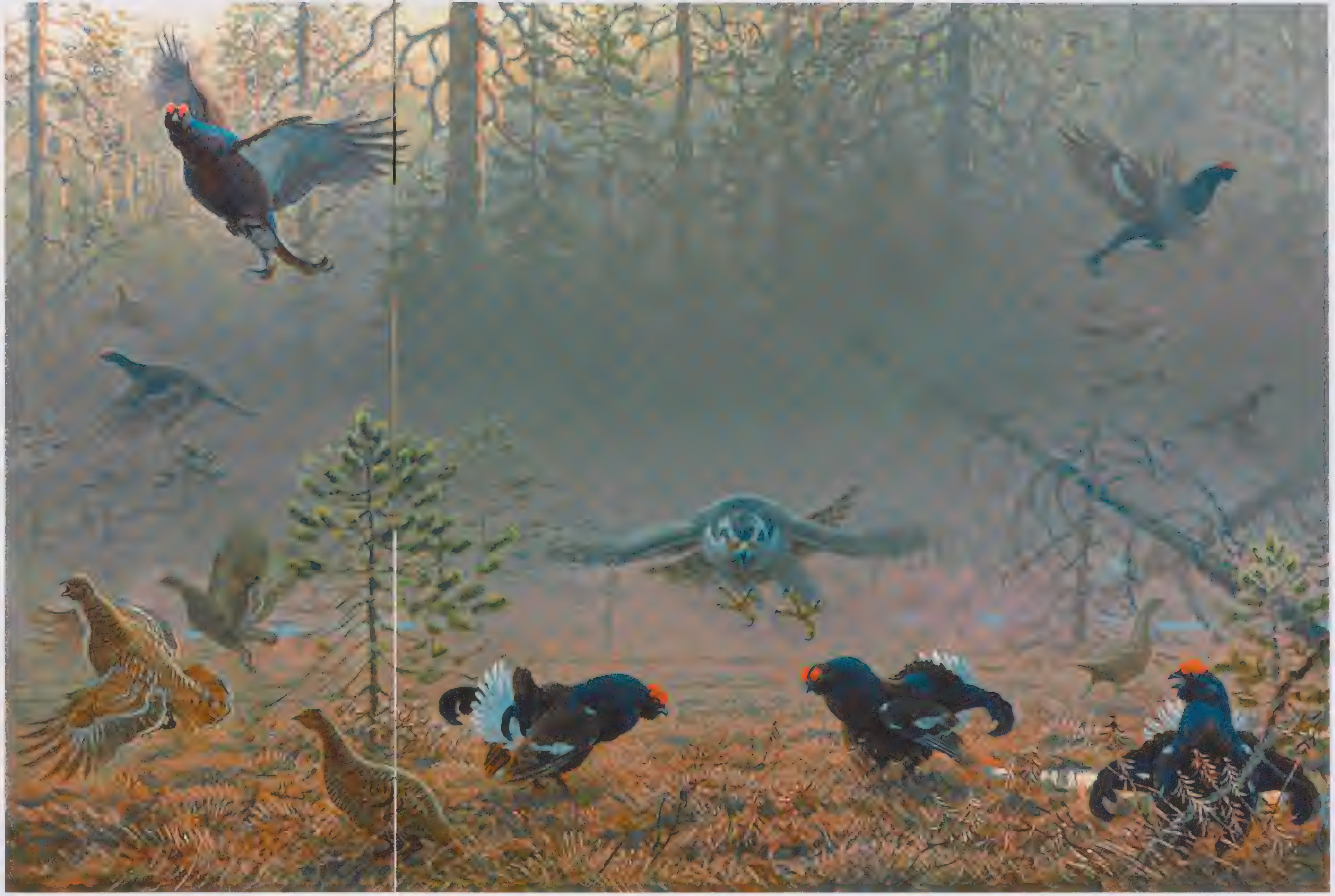
A stunning portfolio of paintings by Russia's premier wildlife artist

In the United States, at least until recently, wildlife painters got little respect. The few exceptions—an Audubon here, a Rungius or Fuertes there—stood out starkly. Exactly why this was so is hard to understand; in Europe and England naturalist-artists have always had a place.



The same has also been true in Russia, which even under the Soviet system was a nation of nature lovers. In Russia, perhaps the best-known "animalier" is Moscow's Vadim Gorbatov. He appears everywhere—in calendars, magazines (especially in *Hunting and Nature,* the oldest continuously published outdoor magazine in the world), books, and galleries.

Since the dissolution of the Soviet Union, he has begun to get more exposure in the West. Part of his new visibility results from his participation in the Artists for Nature Foundation. Based in the Netherlands, this organization brings together well-known artists in every medium from all over the world to what its founder, Ysbrand Brouwers,



Gorbatov is especially drawn to the goshawk, a native of his beloved northern forests. Some of the finest examples of the goshawk in art were achieved by anonymous painters in 17th-century Japan, but Gorbatov has matched or even exceeded them. Look at his adult goshawk swooping into a group of strutting Black Grouse (above) or his immature goshawk missing a Mallard (at left).

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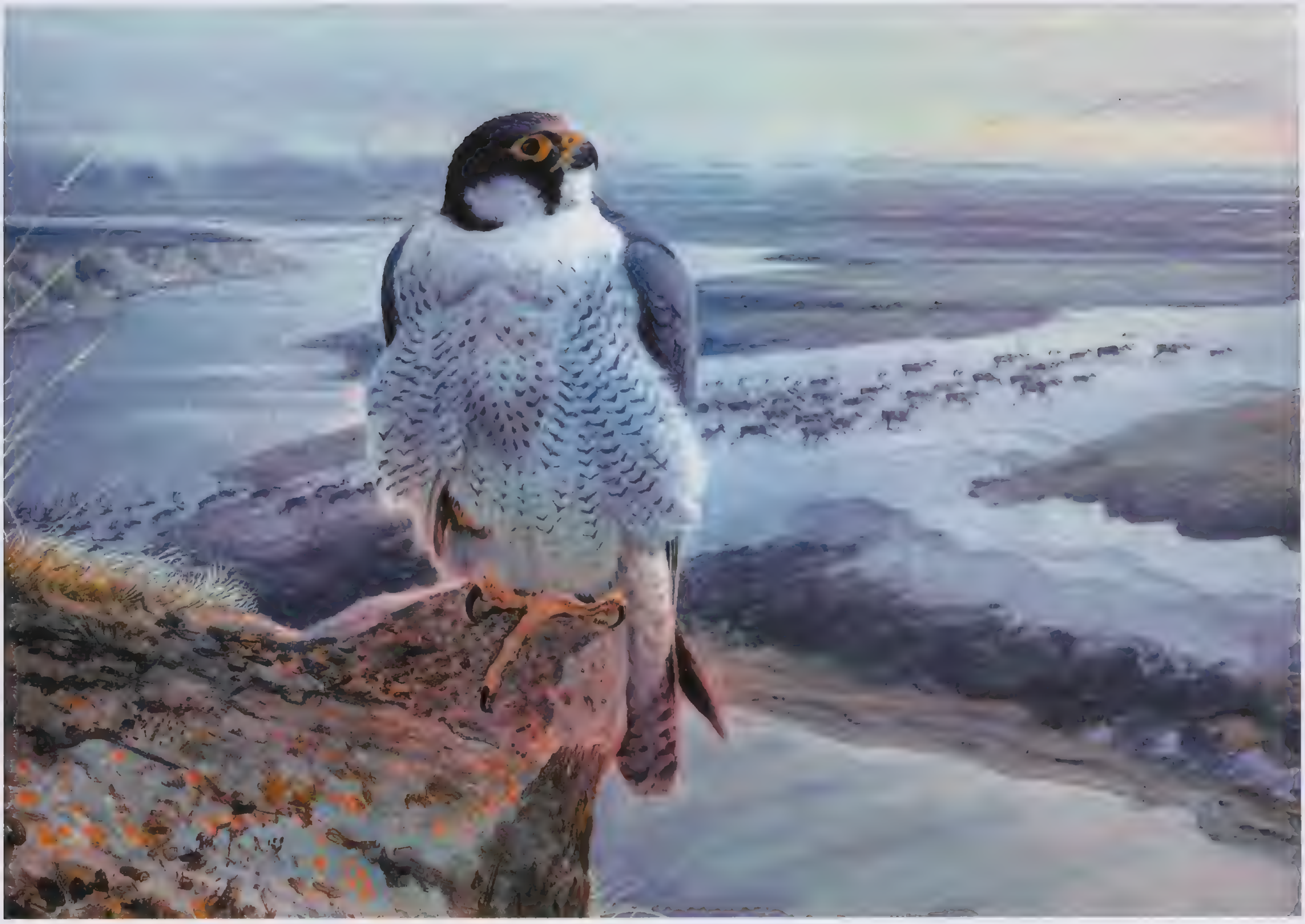


Gorbatov's evocative portrait of an adult Peregrine Falcon at rest captures the silent grandeur of the Arctic. Behind the falcon, vast herds of caribou migrate across the frozen tundra.

calls "endangered locations," so that their artwork can focus attention on the need for conservation. Gorbatov has been working with the organization since its beginning in 1999 and has expanded his palette to include wildlife from Alaska, the Pyrenees, India, and elsewhere. But his favorite subjects—birds of prey, large predators, and the fauna of northern Russia, the taiga, and the tundra—remain his most evocative.

Vadim Gorbatov was born in 1940. Like most naturalists, he started young. "I began to draw very early, when I was four years old." he said. "It was wartime, and, like all children of that time, I drew pictures of war. At the same time, I started to draw animals. One time in kindergarten, prior to the New Year's Day holiday, while children were sleeping, a room for games was decorated with stuffed birds and mammals, dry tree branches, leaves, and cotton. When I entered the room, I was stunned. This picture impressed me so profoundly that I remember it today, sixty years later."

He learned from books as well. "Books that influenced my childhood were *Animal Heroes* by Ernest Thompson Seton, Rudyard Kipling's *Jungle Book*, and Vladimir Arseniev's *Dersu the Hunter*," he said. Models for his early drawing included sketches and paintings by German artist William Kuhnert: "I was fascinated and endlessly redrew these illustrations and modified them in my own way. I also liked to make small sculptures of animals out of clay and cut them out of chalk."

In rural Russia after the war, life was still simple. "Another source of my interest in animals was the fact that I spent my childhood in a village where I could interact with them and with the beautiful, still rich and unpolluted natural environment of central Russia," he said. "Postwar times were difficult. Therefore, our family as well as our neighbors had chickens, ducks, goats, and pigs. We had dogs and cats. There was a herd of cows and a stable of horses in the village. All of these were themes for my drawings.

"When other kids were playing soccer or flirting with girls, I wandered in the woods, fields, and swamps. I had half a binocular, and I knew all the nests of the birds and dens of the mammals in our forest.

"The impressions of my childhood and the interest in animals that emerged during that time were probably very strong. After I had been involved with new, fresh ideas of 'industrial esthetics' and industrial design, graduated from the Academy, and defended my dissertation, I returned to what was dear to me during my childhood and resumed drawing animals."

I asked him if his parents had any interest in nature or animals. "I don't think they had any particular interest in nature, but they supported my passions and obtained books about animals for me. Most importantly, they did not mind the presence of feathered and furred creatures and other pets in the house. I kept lizards, frogs, salamanders, injured birds, squirrels, and ferrets. I had birds of prey, such as kestrels, buzzards, and sparrowhawks."

Raptors and falconry are among Gorbatov's favorite subjects. He is especially drawn to the goshawk, native of his beloved northern forests, and the Golden Eagle used in falconry by the Kazakh nomads. The fierce goshawk, used as the "kitchen hawk" for nomad and peasant alike because it will catch more edible game than the more specialized and impractical "noble" falcon, is a totemic bird in Gorbatov's art. The masters of the goshawk in art were the anonymous painters of the Tokugawa shogunate in 17th-century Japan, who worked with ink on silk, but Gorbatov has matched or even exceeded them. For perfect examples, look at his adult Northern Goshawk swooping into a group of strutting Black Grouse, or his immature goshawk missing a duck (a painting almost Asian in its delicacy).

For a different kind of portrait—one of ferocity in repose—look at his old Kazakh resting with his trained "Berkut" or Golden Eagle. And notice the contrast of its rich desert colors with the chill grays and dark greens of his Russian paintings.

He remains intrigued by falconry to this day. "Hunting with birds of prey has a special place in my mind. I am fascinated with this kind of hunting; it is simply a part of nature's process . . . profit and trophy hunting have no place in it. In falconry, everything is in the process, not in the result."

Gorbatov does not hunt, but he respects ecologically sound hunting. Hunting in Russia remains respectable. "I was not a hunter when I was a child, but I made bows and slingshots like other boys. Later, during my youth, I hunted Hazel Grouse with a gun. I have a positive attitude toward hunters and do not consider them enemies of nature. The true hunters among my friends with whom I travel to hunt (I do not take a gun, only binoculars and a notebook) are nature lovers who care about the preservation of wild nature. These hunters are excellent pathfinders, knowledgeable in biology and animal behavior. To them, hunting is primarily an interaction with nature and a reason to get away from the big cities. Among Russian artists whose work I value, among writers and actors, there are many true and passionate hunters."

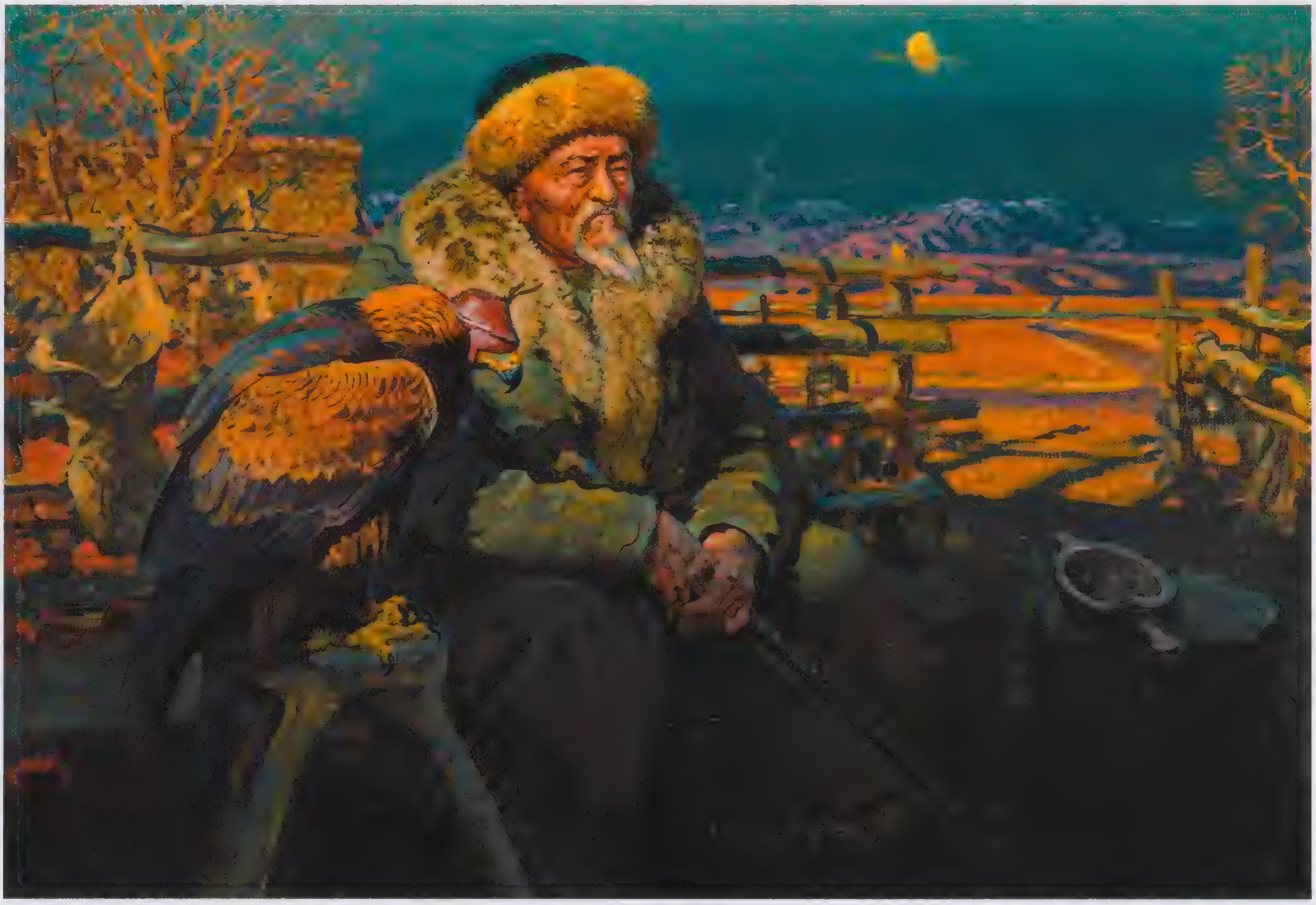
Gorbatov has traveled and studied widely (one of the consistent features of all his art is attention to historical and cultural detail), first in the old Soviet Union—to Kazakhstan and Turkmenistan—and later to India, Alaska, and South America. Of these travels, he speaks warmly: "To the artist-animalist, it is absolutely necessary to work in wild nature and visit the wild places where the animals that you draw live."

Recently he has become fascinated with Karelia, the boggy, forested, subarctic region on the border of Russia and Finland. Any North American can see similarities between this region and Minnesota and parts of Canada. A few of its creatures, such as the Eurasian Capercaillie, the world's largest grouse, are unfamiliar, but both ecosystems share ducks, corvids, cranes, grouse, moose, shorebirds, and weasels, either identical or similar species. Gorbatov plans to complete a series of books on nature there.

Vadim Gorbatov is one of the best-known wildlife artists in Russia. Here he shows an example of his work printed on a Russian calendar.

The Karelian paintings have a damp chill to them that makes me nostalgic for my northern youth as I write these words in the midst of a droughty New Mexico summer. Gorbatov paints changing seasons, mud, and melting snow. Look at his capercaillie crossing a rutted track amid puddles and falling leaves, his duck and redshank in newly ice-free ponds, his swallows in the brief window of summer with darkening skies overhead, his woodcock on a mud island.

European Russia, including Karelia, is a long-inhabited region despite its wildness. Gorbatov, who has spent his life exploring these edges, loves to paint the subtle interactions between man and nature. He will depict, as did Audu-



Gorbatov's study of an old Kazakh resting with his trained "Berkut" or Golden Eagle is a different kind of portrait—one of ferocity in repose. Notice how its rich desert colors contrast with the chill grays and dark greens of his Russian paintings.

bon, human figures going about their business in the background—a horse and sled behind feeding redpolls, a bright window under a Great Gray Owl, or a cabin under that totemic goshawk again, perched on a snowy branch in the winter twilight. The redshank alights on a rotting boat, or a spaniel retrieves a duck in the sunken wreckage of a German tank. Many Western artists depict a nature in which people never existed, but Gorbatov paints history, dogs, farms, and more. He will depict 19th-century Russian princes and peasants, hunts with spear and borzoi and falcon, and fights with bears. In his landscapes, an abandoned chapel's roof lets in the snow; icons and a cross keep vigil in a corner even as crossbills fly above. A capercaillie might perch above a laika dog that barks to summon an unseen hunter. His work with Artists for Nature continues this tradition.

Though Gorbatov has not yet visited the Rocky Mountains and the Southwest—he plans to come in the fall of 2006—his work has already started here. First, he was commissioned to create the art for a Korean translation of Ernest Thompson Seton's late 19th-century book *Lobo*, about a cattle-killing wolf and his tragic death. With typical thoroughness, Gorbatov requested that my wife and I send him nearly 200 photographs of New Mexico backgrounds, trees, arroyos, rocks, and other details.

The results were stunning. That he got everything from rock formations (and wolves, another totemic animal) to 19th-century American firearms right was no surprise. But how did he know that in New Mexico there is always a raven in the sky?

And now his first U.S. work is soon to be published by the Raptor Education Fund in Denver: *Fidget's Freedom*, a children's book about Peregrine Falcon reintroduction and hacking. The young falcon's first attempts to fly and her narrow escape from a hunting eagle are perfect subjects for Vadim Gorbatov, who manages to teach and amuse even as he creates images of great beauty. I can only hope that his new audience and his forthcoming trip make this the first of many American works for one of the finest depicters of birds and mammals of this or any other century. ■

Stephen J. Bodio is a freelance writer based in Magdalena, New Mexico. He is the author of several books, including Aloft, At the Edge of the Wild, Eagle Dreams, A Rage for Falcons, *and more.*

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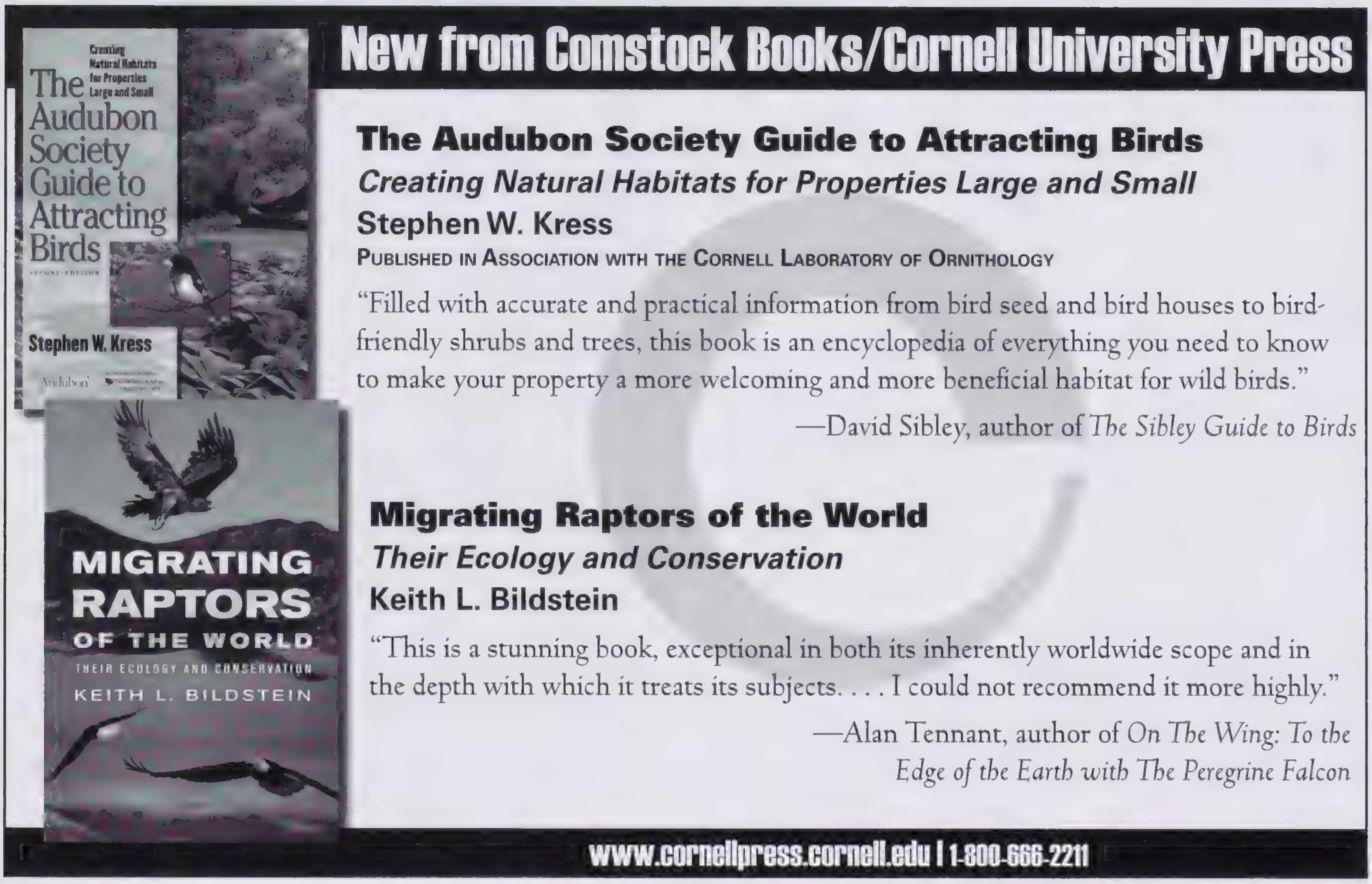

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A Celebration of Shorebirds

BY BARBARA MAYNARD
PHOTOGRAPHS BY MILO BURCHAM

Millions of shorebirds show up at Alaska's famed Copper River Delta each May—just in time for Cordova's annual birding festival

The morning in Whittier, Alaska, was dismal. Rain, wind, and fog were not what we wanted to see as we embarked on a six-hour cruise across Prince William Sound. My husband and I were on our way to the Copper River Shorebird Festival in Cordova, on the eastern side of Prince William Sound. Millions of shorebirds and waterfowl stop in south-central Alaska as they make their way to northern breeding grounds every spring, and for 17 years the tiny town of Cordova has celebrated these avian visitors with an annual festival.

The Western Hemisphere Shorebird Reserve Network calls the Copper River Delta "possibly the most important shorebird concentration in the world." Most of the birds stay only a few days, but in that short time, they stuff themselves on clams, crustaceans, and marine worms, gaining up to one-third of their body weight. Some species stay to breed around the ponds and marshes throughout the delta.

Like most of Alaska, Cordova is not connected to the road system. Getting there requires taking a plane, a ferry from Whittier or Valdez, or, for the past three years, a cruise from Whittier tailored for festival participants by Kenai Fjords and Prince William Sound Tours. The tour boat was a good tradeoff for us—the schedule allowed less time at the festival itself, but it provided more opportunities to see pelagic birds and marine mammals.

Captain Mark Lindstrom acted as chief naturalist aboard the 95-foot *Nunatak.* Not long after departing Whittier, we saw Pigeon Guillemots and Marbled Murrelets ducking underwater to escape the boat's path. As

Migrating shorebirds (right) gather by the millions at the Copper River Delta, gorging on crustaceans, marine worms, and other abundant foods to sustain them on their long journey south.

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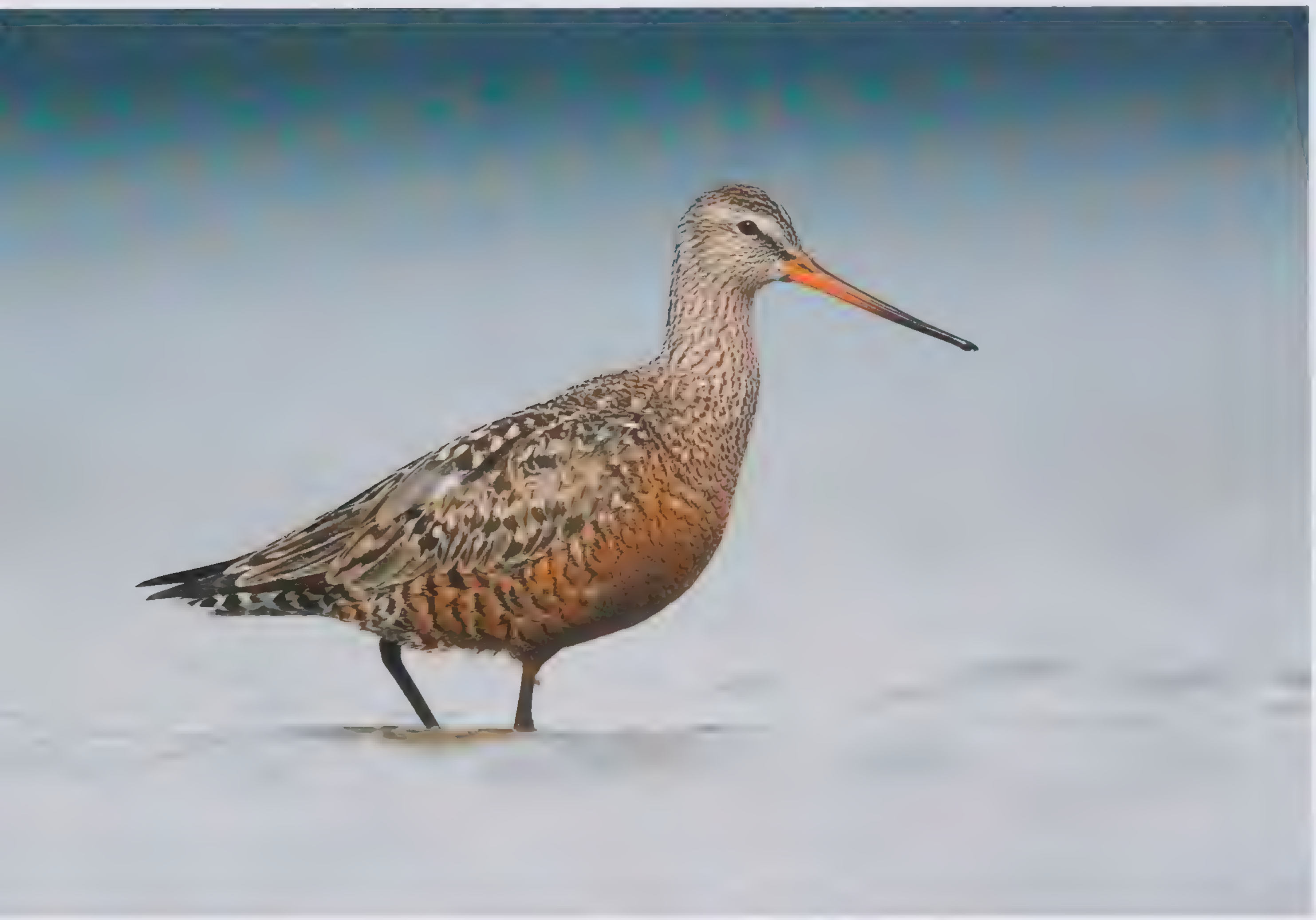
the passengers moved out on deck for a better view, Lindstrom explained the importance of old-growth forests as Marbled Murrelet breeding grounds. The football-shaped birds, better suited for flying under water than in the air, seemed ill-equipped to be tree nesters.

Sea otters were plentiful, and Glaucous-winged Gulls and Black-legged Kittiwakes were usually somewhere in sight. The long dark necks of Pelagic Cormorants rose above the waves from time to time. Occasionally, a black head distinguished a Bonaparte's from the other gulls. We also spotted an Arctic Tern and a Pomarine Jaeger. A North Pacific humpback whale blew a few times in the distance but didn't stay around to show itself. A pod of resident orcas was more flamboyant, porpoising around the boat.



The Hudsonian Godwit (above) is a fairly common visitor to the Copper River Delta for a brief period each spring. The similar Bar-tailed Godwit, which is also sometimes seen in the Cordova area, lacks the heavy horizontal barring found on the breast of a Hudsonian Godwit.

Prince William Sound is famous for its glaciers, but the only sign of them through the fog was the sudden abundance of small icebergs around us as we passed Columbia Glacier, the largest tidewater glacier in the Sound. Some of the small bergs were stained black from glacial sediment, providing camouflage for a flock of Kittlitz's Murrelets.

After crossing the shipping lane to Valdez, we came to Bligh Reef. During his quest for a Northwest Passage, famed explorer Captain James Cook named the reef in honor of William Bligh, who served as sailing master for Cook but is better known for his later role as captain of the ill-fated *Bounty*, which was seized by mutineers off Tahiti. The reef achieved its own grim measure of fame when the *Exxon Valdez* went aground there on Good Friday, 1989, spilling 11 million gallons of crude oil into Prince William Sound. Seventeen years later, the spill remains very much a current topic for those who make their living on the Sound.

Good Friday has sometimes been far from good to south-central Alaska. Years before the *Valdez* disaster, on Good Friday, 1964, the Great Alaska Earthquake shook coastal towns from Valdez to Kodiak Island. The quake and resulting tsunami killed more than 100 people. The ecological consequences are still playing out, as we would learn the following day.

The weather on our crossing of the Sound was rough, and we arrived in Cordova late. After checking in at our hotel and registering for the festival, we had a quick dinner before heading to the elementary school auditorium to hear keynote speaker Tim Gallagher, editor-in-chief of *Living Bird*. He entertained a packed crowd of about 100 with the story of his quest for the Ivory-billed Woodpecker. His mention of a particularly cold Louisiana morning when the temperature plummeted to 30 degrees above zero drew a chuckle from the mostly Alaskan crowd.

Many of Cordova's 2,400 residents make their living directly or indirectly from the sea. It feels like a working community and is relatively free of the souvenir shops that line the harbors of Alaskan towns visited by large cruise ships. The 126 registered participants at the festival seemed to take over the town. The bookstore, restaurants, and sidewalks were full of people wearing birding binoculars.

The two primary hotspots for birding in Cordova are Alaganik Slough for waterfowl and Hartney Bay for shorebirds. The festival runs daily bus trips to both locations, which provide a good opportunity to meet other birders and learn from each other's expertise.

Saturday's bus to Alaganik Slough left at 10:00 A.M., so we first indulged in the Birder's Pancake Breakfast, served in the basement of St. Joseph's Catholic Church. The eight-dollar "pancake breakfast" meant all-you-can-eat buckwheat pancakes, scrambled eggs, hash

Seen from an airplane, the Copper River Delta is a vast watery wilderness, fed by glaciers in the nearby mountains.

browns with reindeer sausage, homemade muffins (I recommend blueberry), juice, and a bottomless cup of coffee.

As we boarded the bus for the slough, the day was overcast, but the skies seemed a little higher than the day before. Rain drizzled halfheartedly off and on all day, and the temperature hung in the mid-40s. We were told that Cordova had enjoyed two weeks of sunshine before the festival—welcome to Alaska in the springtime.

Paul Meyers, a wildlife biologist with the U.S. Forest Service in Cordova, guided the tour to the slough. At a roadside stop en route, we enjoyed a clear view of a Trumpeter Swan sitting on her nest not more than 50 yards from the road. The Copper River Delta hosts the world's largest population of nesting Trumpeter Swans. Another pond held Northern Pintails, Canada Geese, and Mallards. Ruby-crowned Kinglets and a Savannah Sparrow sang in the shrubs behind us, and one birder heard the first Wilson's Snipe of the season.

As we continued our drive, Meyers explained how the 1964 earthquake continues to affect the "Dusky" Canada Goose, a dark subspecies known to nest only on the Copper River Delta. The earthquake, the second largest ever recorded, uplifted the ground by 6 to 9 feet in places. In some areas, this turned what had been a tide-influenced sedge meadow into much dryer territory, and in others, it created entirely new land from formerly submerged sections. The dryness was not directly bad for the geese, but as new vegetation crept in, nest predators such as brown bears and Bald Eagles came with it, and "Dusky" Canada Goose numbers have declined since the late 1970s. To reduce the effects of nest predation, biologists from the Chugach National Forest installed 350 floating nest islands throughout the delta. Meyers said nesting success on the islands is now double that of other areas.

At the Slough, a 900-foot boardwalk provides access to the wetlands. To our right, a single Common Loon floated on a distant pond, while Horned Grebes showed off their colors nearby. A Greater Yellowlegs worked the hummocks between two ponds, and a Great Blue Heron fished on the back edge of the farthest pond. An Arctic Tern chattered past.

To the left, several Green-winged Teal preened on the riverbank while Greater White-fronted Geese milled around. Other birds on the three-hour tour included Buffleheads, Common Mergansers, Greater and Lesser scaups, Canvasbacks, Ring-necked Ducks, American Wigeons, Barrow's and Common goldeneyes, Lesser Yellowlegs, a pair of Red-necked Grebes, a Northern Harrier, and an Osprey. On our return trip, we stopped by one last pond to see four Red-necked Phalaropes about 35 yards from the road.

The festival had several activities for Saturday afternoon, including art displays at the native cultural center, the bookstore, and the library; a kid's birding workshop; a nature movie debut; and a children's art workshop. We opted to hear Ducks Unlimited biologist Eduardo Carrera speak about the effects of poorly planned shrimp farming on mangrove swamps on the western coast of Mexico, and the consequences for migratory shorebirds and waterfowl.

KACHEMAK BAY SHOREBIRD FESTIVAL

Another Alaskan fishing community also celebrates the annual arrival of plovers, sandpipers, godwits, and more. For the past 14 years, Homer has hosted the Kachemak Bay Shorebird Festival on the first or second weekend in May. (Next year, it takes place May 10–13, 2007—the week after the Copper River Shorebird Festival.)

Responding to a hunting Peregrine Falcon, a flock of shorebirds rises from the mudflats in a swirling ball as birders watch.

Although birders might not see as many shorebirds covering the mudflats at Kachemak Bay as they would at the Copper River Delta, they might see a greater diversity of species.

"We are blessed with a variety of very accessible species, but our numbers are rarely comparable to Copper River," said Carla Stanley, one of the coordinators of the Kachemak Bay Shorebird Festival.

The best way to see eiders, puffins, and Kittlitz's Murrelets is to take one of the many boat tours offered during the festival. Aptly named Gull Island is a favorite destination, with more than 15,000 birds and 9 species nesting there, including Black-legged Kittiwakes, Red-faced Cormorants, Tufted and Horned puffins, Common Murres, Pigeon Guillemots, and the ubiquitous Glaucous-winged Gulls. One hundred sixteen species were reported at this year's Kachemak Bay Shorebird Festival.

"This year we had more Pacific and possibly American golden-plovers than I can ever remember seeing," Stanley said. "We also had a gorgeous Bar-tailed Godwit in fresh breeding plumage. A Short-eared Owl has been hunting regularly at the Old Tern Colony near the Mew Gull nesting area." Other highlights included Steller's and King eiders, Kittlitz's Murrelets, a Red-necked Stint, a Yellow-billed Loon, an Emperor Goose, and Black Oystercatchers.

Homer also attracts 10 times the number of birders as Cordova—between 1,000 and 1,500 people participated in 2006. To accommodate everybody, the Kachemak Bay Shorebird Festival offers a longer list of scheduled activities. In addition to boat tours, participants can choose from a selection of guided walks, bus tours, classroom sessions, concerts, guest speakers, and nature films.

One feature of Homer birding might be dramatically different by next spring. For years, a woman known locally as the Eagle Lady has fed Bald Eagles on Homer Spit, a finger of land pointing into Kachemak Bay. This year the practice was banned; if the restriction is enforced, eagle numbers are likely to drop from hundreds to a more natural concentration of a handful. Bald Eagles, however, are abundant throughout the Kenai Peninsula.

That evening we walked to the Powder House restaurant on Lake Eyak a few miles out of town. Along the way, we detoured to a boardwalk over Odiak Pond behind the hospital, where we saw a Belted Kingfisher, a pair of Lesser Scaup, two pairs of Canvasbacks, and a Steller's Jay. A half-dozen Tree Swallows zipped and swooped over the pond. A beaver also cruised around the water's edge. Along our walk, Varied Thrushes whistled from the spruce tops. During dinner, we watched a couple of male Buffleheads on the lake.

We had saved the best part of the festival for Sunday morning. Hartney Bay is the best place to see concentrated flocks of shorebirds, and we were not disappointed. In recent years, the birds have beaten the festival to Cordova by a day or two, but this year the timing was perfect. A mat of thousands and thousands of peeps covered the mudflats downhill from the bus stop. Most were Western Sandpipers, with just enough Least Sandpipers mixed in to present a birding challenge. (The leasts were distinguished by their lighter legs and lack of rufous coloring on their heads.)

The black bellies of Dunlins helped them stand out. In contrast with the constantly moving sandpipers, the Semipalmated Plovers stayed relatively still—long enough for birders to get a good look. With so many shorebirds feeding voraciously in such a concentrated area, I couldn't help but marvel at how many invertebrates must be in the mudflats to feed them all.

Fifteen Green-winged Teal clustered along the water's edge and a Song Sparrow sang from the alders across the road. As we walked back to the bus, a Yellow-rumped Warbler flitted through the brush and a Savannah Sparrow sang. Other species at the bay throughout the festival included Whimbrels, Black-bellied Plovers, a Pacific Golden-Plover, and Long-billed and Short-billed dowitchers. At least one Hudsonian Godwit was seen at the Bay, and almost a dozen were regulars throughout the festival at Odiak Slough, in town behind the grocery store.

As we leisurely took in the sound of thousands of peeps at the bay, other birders were in the midst of hot competition. A 24-hour Birder's Challenge had kicked off at 9:00 P.M. on Saturday evening, and an 8-hour challenge started at 1:00 P.M. on Sunday. At Cordova's latitude in early May, the sun doesn't set until 10:00 P.M., with twilight lingering for another hour, so the 24-hour birders had plenty of time to work. The winning team for the 8-hour challenge recorded 62 species, and the 24-hour winners came in with 78.

After getting breakfast burritos from Baja Taco (locals call it the Taco Bus because the kitchen is a vintage red Chevy bus), we boarded the *Nunatak* for our trip back to Whittier. Never have I seen a group so grateful to a couple of their fellow passengers for showing up late for departure. As we waited on board, a Slaty-backed Gull landed on a piling not 100 yards away and posed until long after everyone had had a chance to carefully compare this Eurasian visitor with the abundant Mew and Glaucous-winged gulls milling around the harbor.

Molting into its adult plumage, this Dunlin is unmistakeable with its distinctive black belly patch.

"That tops it off," one passenger exclaimed. Little did we know that the Sound had a few more treats in store.

As the *Nunatak* motored away from Cordova, we were not alone in enjoying the first sunshine of the weekend. Steller's sea lions sunned themselves on buoys, tipping the red and green markers to precarious angles. A Surf Scoter swam by.

About an hour later, a half-dozen Dall's porpoises played in the boat wakes, rising high enough out of the water to show us the white sides that make them resemble miniature orcas. Soon after, we sailed through a flock of hundreds of Pacific Loons.

During a lull in the wildlife sightings, Lindstrom compiled a list of all the species seen by the 80-plus passengers and the crew over the weekend. The total came to 95 species.

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PLANNING YOUR TRIP

Next year, birders will be able to attend both of the south-central Alaska shorebird festivals. The Copper River Shorebird Festival will be held May 3–6, 2007. The Kachemak Bay Shorebird Festival will be held the following week, May 10–13, 2007.

Keynote speakers invited for 2007 are Scott Weindensaul, author of *Living on the Wind* and numerous other natural history books, at Copper River, and John Acorn, author of insect and bird guides and the writer and host of the television series "Acorn, the Nature Nut," at Kachemak Bay.

COPPER RIVER SHOREBIRD FESTIVAL

Information on the festival is available from the Cordova Chamber of Commerce, (907) 424-7260 or <www.cordovachamber.com>.

Make your lodging reservations early. A list of hotels, motels, and B & Bs is available at <www.cordovachamber.com>. After every room in town is booked, Martin Moe of the Cordova Chamber of Commerce, (907) 424-7260, does his best to find accommodations in local homes.

For the Kenai Fjords/Prince William Sound Tour from Whittier, call (800) 478-8068 or visit <www.kenaifjords.com/1086.cfm>, $149 plus tax per person, discounted 10 percent in 2006 for members of the National Audubon Society.

Alaska Airlines provides service to Cordova from Seattle and Anchorage, (800) 252-7522 or <www.alaskaair.com>. ERA Aviation offers flights from Anchorage, (800) 866-8394 or <www.flyera.com>.

The Alaska Marine Highway provides ferry service from Valdez and Whittier, (800) 382-9229 or <www.akmhs.com>.

Cordova Auto Rentals rents cars for $75–$85 plus tax per day. For an additional fee, they will provide transportation to and from their airport location, 12 miles out of town (907) 424-5982 or <www.ptialaska.net/~cars>. Out of the Road RV Rentals rents RVs, (907) 424-7279 or <ecolano@gci.net>.

KACHEMAK BAY SHOREBIRD FESTIVAL

Information on the festival, lodging, and car rentals is available from the Homer Chamber of Commerce, (907) 235-7740 or <www.homeralaska.org>.

ERA Aviation offers flights from Anchorage, (800) 866-8394 or <www.flyera.com>.

Homer Stage Line offers shuttle service from Anchorage (about $110 roundtrip) and Whittier (call for fare), (907) 235-7009 or <www.homerstageline.com>.

Most major car rental companies are available at the Anchorage Airport.

After the loons, the Sound was free of wildlife just long enough for the rhythm of the boat to lull passengers to sleep before a humpback whale blow was spotted. Following regulations, the *Nunatak* did not approach closer than 100 yards, but the whale was under no such restriction. It came right up to the boat, and for about an hour the whale rose first on one side of the boat and then the other, sometimes spraying passengers with its exhalations, and slowly rolling to one side to get a good look as about 200 eyes stared back. Finally, the whale flipped its flukes toward us, indicating a sounding dive, which meant the visit was over.

Just when we thought we had seen everything the Sound had to offer, Lindstrom called out, "Fork-tailed Storm-Petrel!" I wasn't fast enough on deck to see it, but I did get a good look at the Long-tailed Jaeger that flew past soon after. These final observations brought the group total to 97 species. Not bad for one rainy weekend. ■

Barbara Maynard is a freelance writer based in Soldotna, Alaska. This is her first article for this magazine.

BIRDING JOURNAL #380

I WEAR A LOT OF HATS IN MY JOB— THEY ALL JUST HAPPEN TO SAY "NIKON."

Long-eared owls consume a great deal of my life as a researcher and field biologist. This afternoon however, my thoughts are not as a scientist, but a birder. Scanning just under the treetop-canopy with our Nikons, we look for roosting sites and motionless owls in the tricky environment of heavy shadows mixed with midday light. It's a great day—we capture two—and then my researcher cap is on again and the work begins. Banding, measuring and examining these magnificent birds sometimes requires quick thinking—my Premier LX_L has been known to double as a field microscope when used in reverse to examine pellet skulls and feather structure. I've admired Nikon for years, and knowing Nikon's commitment to research and conservation, I'm extremely proud to stand behind this company.

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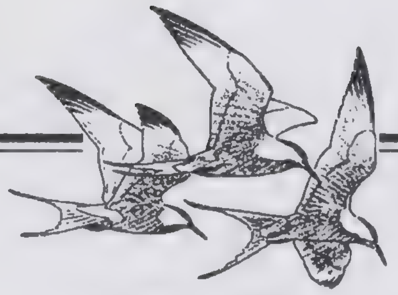

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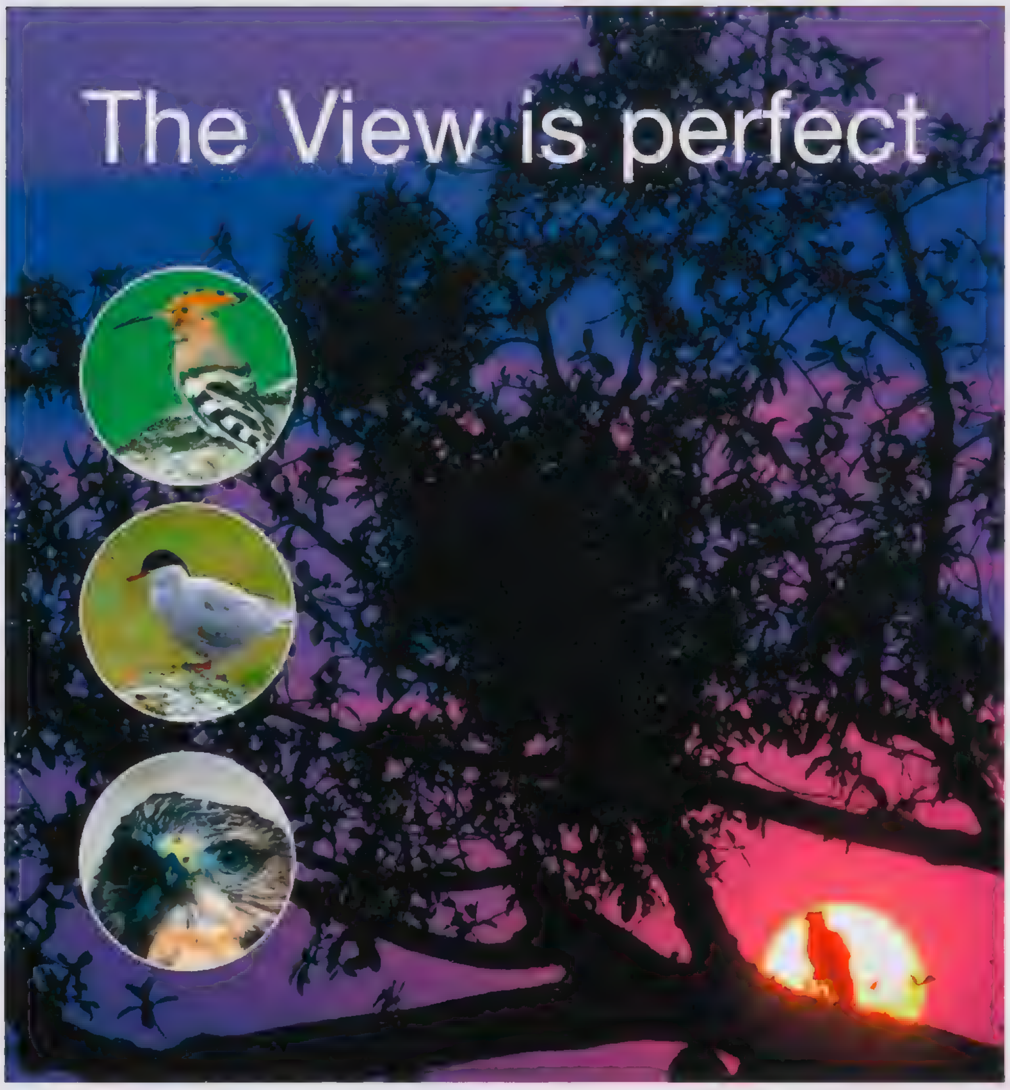

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In the Field

HYBRIDS ARE NOT FREAKS

by Jack Connor

Why hybrid birds should not go unloved

The most unusual bird I have ever discovered by myself appeared on a small lake in Danbury, Connecticut, early one morning in December 2001. I had been mindlessly scanning a mixed flock of ducks on the far side of the water when something different paddled through my binoculars' field of view and sent my heartbeat racing: a drake the size of a Mallard with pale gray flanks, a black-and-white spotted face, a green crown and nape, and a bright blue bill.

For a few thrilling moments I thought I'd discovered a Eurasian stray—or some other vagrant so unfamiliar I could not remember seeing it in a field guide. After a quick recheck of the odd colors, I charged back up the trail toward my in-laws' house for my scope and camera. Halfway up the hill, I came to my senses—the ID hit like a punch in the gut—and I slowed to a walk. It had to be a hybrid, of course . . . nothing more than a hybrid.

I gathered the equipment without bothering to wake the household, returned to the lake, and took some photographs. The scope view and pictures showed a patchwork mix of Mallard and American Wigeon features: the blue bill and spotted face of a wigeon the head shape and flanks of a Mallard, and a rosy wash on the breast and a green line on the head that seemed to be genetic compromises—more of each color than found on a wigeon, less than on a Mallard.

I showed the pictures to a dozen birders over the next several weeks, and most responded exactly as I would have in their shoes. "That's cool," said one. "Did I tell you about the Bald Eagles I saw last week, already back at their nest site?"

If it had been a Eurasian vagrant on the lake that morning—a Tufted Duck, say—my friends would have wanted all the details. And, to be honest, I would have been a lot more excited myself. Mallard-wigeon crosses may be harder to find than Tufted Ducks (they are reported less often, at least), but there's something about a hybrid that seems . . . well, illegitimate. Hybrids seldom make the hot lines, rarely draw crowds of observers, and generally leave us uncomfortable. You won't find spaces on your checklist to note them, and why should you? They are freaks, after all—aren't they?

Most birders are old-fashioned Aristotelians, whether we admit it or not. No matter how much we gripe about the complexities of scientific nomenclature or the latest round of lumping and splitting by the American Ornithologists' Union, we relish naming and classifying, and the usual identification game ends when we place the bird we have under observation into an appropriate category. "I know that bird in the bush," the happy birder declares. "It's a Blue-winged Warbler." Like Aristotle, Linnaeus, and virtually all naturalists before Darwin—and probably also the majority of naturalists after Darwin—we feel that the essence of a living creature can best be indicated by naming it. Each individual bird represents a unique group, its species.

Hybridization occurs more often than most of us recognize, however. David Sibley's eye-opening "Guide to Finding & Identifying Hybrid Birds," published in *Birding* in 1994, lists well over 100 species of North American birds in which hybridization has been documented. These include more than 30 species that hybridize frequently (for example, Mallard and American Black Duck, Blue-winged and Golden-winged warblers, Indigo and Lazuli buntings); 60-plus species that hybridize occasionally (Mallard and wigeon, Little Blue Heron and Snowy Egret, Blue and Steller's jays); 20-plus species whose hybridizations are probably detected much less often than they occur because the parents are so physically similar (Western and Clark's grebes, King and Clapper rails, Eastern and Western meadowlarks); and 40-plus species that have participated in "bizarre combinations" (Gadwall and Hooded Merganser, Northern Parula and American Redstart, Red Crossbill and Pine Siskin). Sibley explains that hybrids often look so much like one of the parent species that many undoubtedly pass unnoticed in the field. They are more easily found in museum collections, he notes, where observation in the hand is possible.

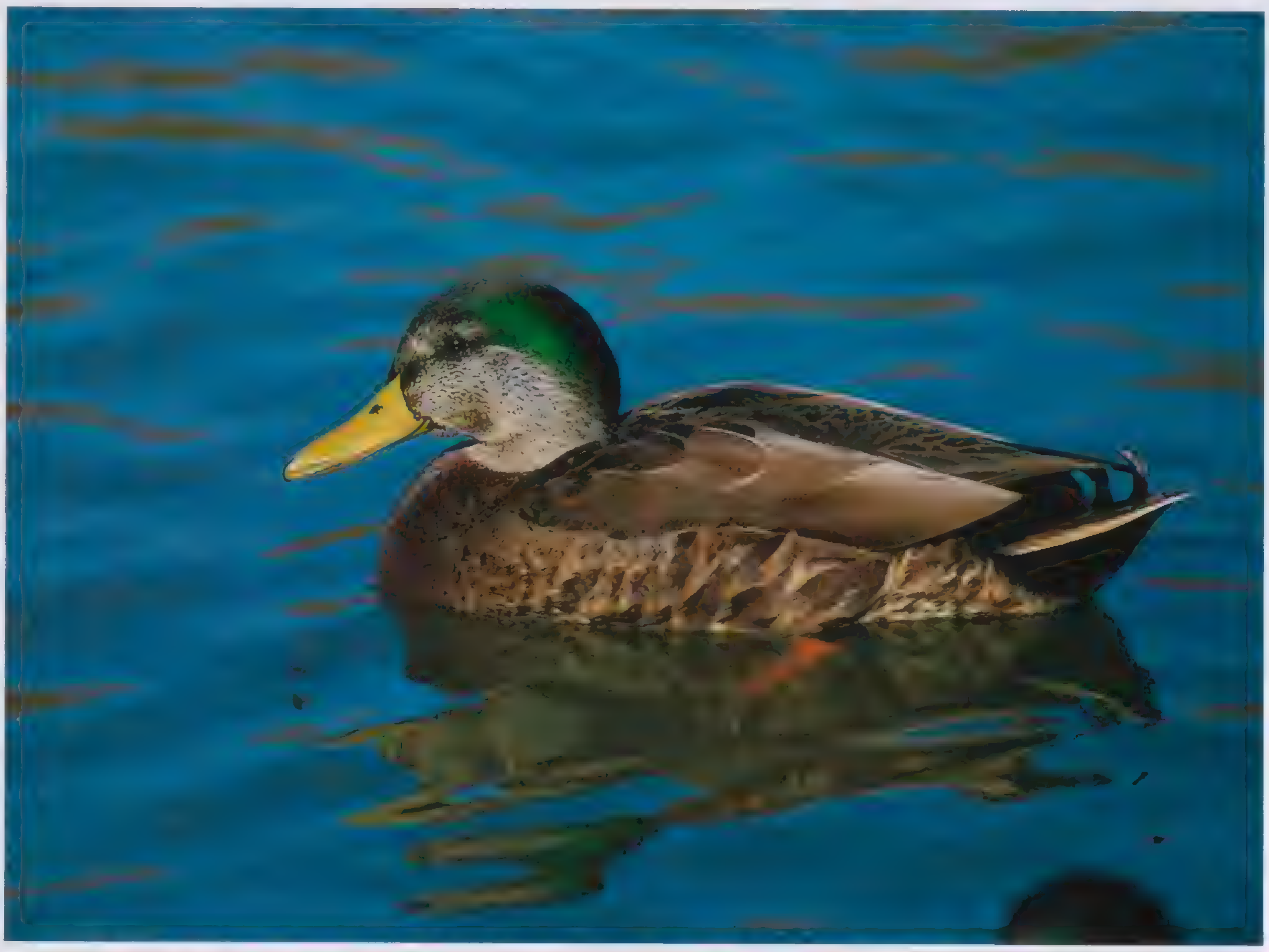
Even among regularly recognized hybrid pairs—Mallard and American Black Duck crosses, for example—when observers know to look for it, mixed parentage can be difficult to detect with binoculars or spotting scopes, especially females and second-generation hybrids, in which visible clues are usually subtle. A recent study by the Northern Prairie Wildlife Research Center (Kirby et al., 2000) examined wing specimens contributed by hunters (and other evidence) and concluded that mixed parentage in American Black Ducks is nearly three times as frequent as previously supposed. The general estimate had been that approximately 5 percent of Black Ducks had mixed parentage; the Kirby study estimates it at more than 13 percent.

In short, hybridization is a fact of life among many birds, and its frequency puts into question the standard definition of species most of us memorized in high school. According to your old biology textbook, a species includes "all members of an interbreeding, or potentially interbreeding, population." That definition won't work for American Black Ducks and Mallards, however, nor for Blue-winged and Golden-winged warblers, King and Clapper rails, Cinnamon and Blue-winged teals, or any of the other regular parental contributors in "cross" combinations—even when we add the proviso that true interbreeding must lead to fertile young. The addendum keeps horses a separate species from donkeys because mules are not fertile, but many of the hybrid pairings on Sibley's list lead to fertile young.

Specialists debate the merits of the Biological Species Concept (the basis of the textbook definition above) and some have proposed alternative definitions, most prominently the Phylogenetic Species Concept, which avoids the difficulty of breeding behavior but has problems of its own. Taxonomists who support the BSC often study the history of hybridization between a given pair of species. A stable hybrid zone, such as the narrow geographic area where Black-capped and Carolina chickadees overlap and interbreed, suggests the two populations will remain separate elsewhere in their ranges; an expanding zone, like those found between Mallards and American Black Ducks and between Blue- and Golden-winged warblers, suggests two gene pools headed for a merger. These analyses and arguments often grow complicated and hard to follow. Generally overlooked, however, is a simple, intriguing point about hybridism and Darwin's theory of evolution: hybrids are not freaks. By Darwin's explanation, they are perfectly natural and should be expected.

"Why is hybridism permitted?" Darwin asks rhetorically in *Origin of Species.* If species were truly separate entities, they would never mix. But they do mix, even more often among plants than animals—and make any definition of species seem arbitrary. It's not the definition that is the problem, however; it's that species themselves are constantly evolving. Hybridism, Darwin notes, "harmonizes perfectly with the view that there is no essential difference between species and varieties." He compares constructing a definition of species to deciding "whether a certain number of houses should be called a village, town, or city." A variety may become a separate race, and a race may become a separate species, but all descendants of the original ancestral population are related to one another, even after they can be split into populations so separate we call them species.

In another section of his book, Darwin uses vestigial organs to demonstrate that apparently distant species share common ancestors. Today, microbiology allows modern scientists to make the same argument by tracing the ancestral lines shared by different species evident in chains of DNA. Birders can't study DNA through binoculars, of course, and most vestigial organs are hidden from sight, but we can see the ancestral connections between birds when we look at hybrids. Just as the tiny, vestigial legs found on certain snakes demonstrates that they share a common ancestor with four-legged reptiles, hybridization between Mallards and American Black Ducks demonstrates that their ancestors were, not so long ago, a single population. Hybrid pairings, in this sense, are a kind of vestigial behavior. Blue-winged and Golden-winged warblers interbreed so frequently—and may merge back together again over the next 10,000 years or so—because they are members of populations still evolving and they share a common ancestor. Hybrids are "permitted" because species share ancestors. In fact, if hybrids could not be found, we would have to wonder: why not? ■



Hybridization between a Mallard and an American Black Duck demonstrates that their ancestors were formerly a single population. In this sense, hybrid pairings are a kind of vestigial behavior.

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BLUE JAY BY MARIE READ

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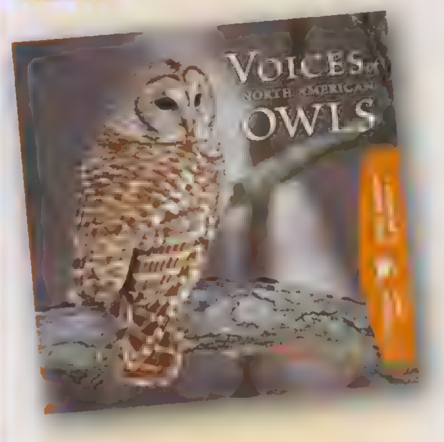

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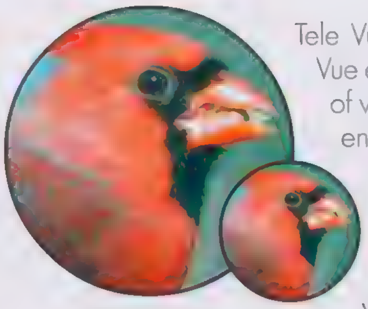

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BIRDING BLIND

by Pete Dunne

In an avocation replete with misnomers (e.g., Red-bellied Woodpecker), it is refreshing to contemplate the accuracy of the term "bird blind." Clearly the person who named these things had firsthand experience. But why birders would choose to place themselves in a visibility-constricting box to watch birds mystifies me.

He's joking (you're thinking). Everybody knows that bird blinds allow birders greater intimacy with birds because if you're sitting in a blind, birds don't see you.

Uh huh. You know this to be so because why? You've seen the data? You've consistently seen more birds and seen them better while inside a blind as opposed to outside?

I haven't. In fact, just the opposite. When sitting in a blind, I find myself constantly having to go outside to see the bird that's singing where the viewing slits don't allow it to be seen. In your average blind this no-see zone encompasses about 70 percent of the known universe.

And let's take a look at the rarely examined premise that blinds allow birds to feel more secure (because they don't see you) and that this translates into better viewing opportunities.

Let me tell you about an experience I just had in Texas. In the span of just a couple of hours I visited two different birding spots: Bentsten-Rio Grande State Park and the nearby World Birding Center. At Bentsten, they've got blinds—nice ones, too—overlooking bird feeders and a water source. Through the viewing slits, I could see Plain Chachalacas, Olive Sparrows, Long-billed Thrashers, and Altamira Orioles.

At the World Birding Center they have water sources and bird feeders but no blinds. Just benches. Know what? I had the same birds at about the same distance. Plus I could see all the other birds around me (which at the time included migrating warblers).

Out of sight equals complacency on the part of birds. I've got another idea. I think that all birds need to be complacent is a consistent pattern of movement. As long as people continue to do what everyone else is doing (like sitting on the bench; like walking down a path; like just standing and scoping), birds just come to regard us as business as usual.

At Jamaica Bay National Wildlife Refuge, I've had Curlew Sandpipers feeding at my feet. They knew I wasn't going to step into the mud because the previous 10,000 birders hadn't.

Okay, so maybe the 10,001 birder was Artie Morris, on his belly, disguised as an oil drum. Photographers have different needs.

Three days ago, at the South Cape May Meadows, I had a Snowy Egret feeding so close to our group of 30 that people could not focus down on it. Was the bird sick? Injured? Stupid?

No. The bird was standing in the water. It didn't care.

I realize that in England blinds (or hides) are very popular. But can you think of another reason why a box with a roof might make an attractive institution in a place celebrated for its cold, rainy weather?

And if you care to argue that birders love blinds because you see them there all the time, I ask you what alternative does a birder have? Blinds are invariably stuck right where the topography offers the best (sometimes the only) viewing opportunity. Birders have no alternative but to go into a blind because it's blocking what would otherwise be a great view.

All right. I'm willing to admit that blinds may have a soothing affect on some species more than others (ducks, geese, cranes, prairie-chickens, and other things that might fall under the label game bird). But I've seen such skittish species as Barrow's Goldeneye, Ring-necked Duck, and Hooded Merganser paddling around with Mallards (and partial Mallards) in assorted city park ponds. They just cue in on the locals and the locals regard moms pushing kids in strollers and retirees reading the paper to be business as usual.

I'm not trying to discourage parks and refuges from erecting structures (such as boardwalks and elevated platforms) that offer birders strategic viewing opportunities. I'm just saying that unless I want to share a cuppa with my birding mate while waiting for the raindrops to stop falling, I'll choose birding outside of the box every time. ■

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